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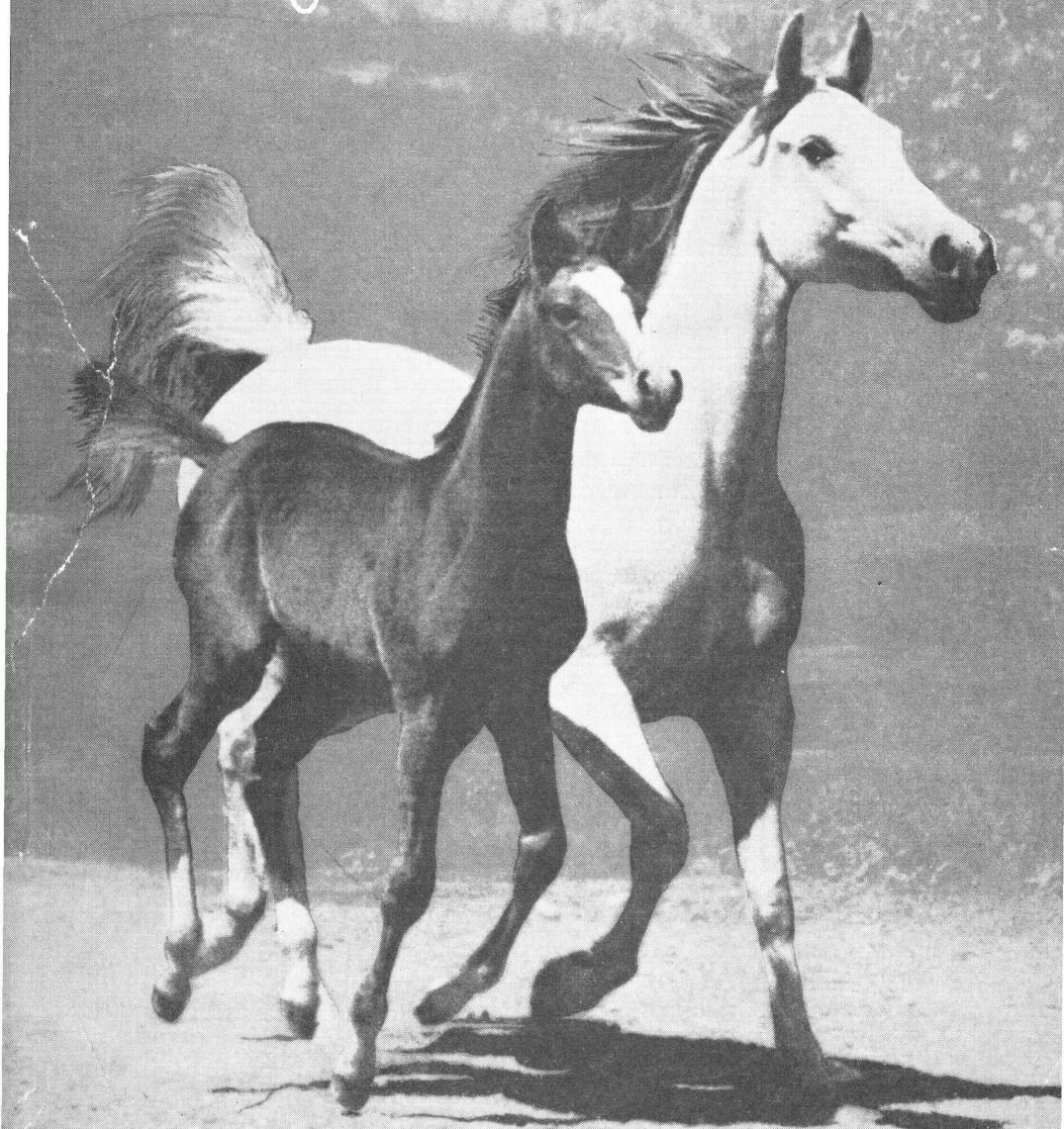
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U. S. DEPARTMENT OF AGRICULTURE

Light-Horses



United States Department of Agriculture



Farmers' Bulletin No. 2127

Increasing interest is being shown in light horses. In this country, there are nearly 3½ million horses and mules, worth some \$280 million. Half of the Nation's farms and ranches have one or more head. About 250,000 of these horses are registered in a light horse breed registry.

Saddle clubs and 4-H horse clubs are growing in membership. Horse shows are increasing in size and number. More people are riding horses for pleasure than ever before.

On the western ranges, light horses are used both for recreation and work. More than 500,000 cow ponies still are used in the traditional manner—mechanical replacement has not yet been devised.

Although the U. S. Department of Agriculture does not conduct research on light horses, this publication is being issued to answer the many thousands of requests for information about light horses that are received each year by county agricultural agents, State colleges of agriculture, and the Department.

This bulletin supersedes Farmers' Bulletin 952, Breeds of Light Horses.

The breed pictures were supplied by the following persons and organizations: Mr. Warren Buckley, Miss Ruth White, Warrick 4-H American Saddle Horse Breeders Club, Mr. and Mrs. Gus Oettermann, Mr. and Mrs. Garvin E. Tankersley, Mr. A. Mackay Smith, Heyl Pony Farm, Morgan Horse Club, Mr. Phillip F. Boyd, Palomino Horse Breeders of America Association, Quarter Horse Journal, Mr. C. C. Teague, Mr. L. B. Sheppard, Wiser's Walking Horse Stables, Mr. Olin Gentry, Mrs. H. L. Sheldon.

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Light Horses

By M. E. ENSMINGER,¹ Chairman, Department of Animal Science, State College of Washington, Pullman, Wash., in cooperation with the Animal Husbandry Research Division, Agricultural Research Service

Horses may be classified as light horses, ponies, or draft horses, according to size, build, and use.

♦ *Light horses* stand 14½ to 17 hands high, weigh 900 to 1,400 pounds, and are used primarily for riding, driving, or racing, or for utility purposes on the farm. Light horses generally are more rangy

and are capable of more action and greater speed than draft horses.

♦ *Ponies* stand under 14½ hands high and weigh 500 to 900 pounds.

♦ *Draft horses* stand 14½ to 17½ hands high, weigh 1,400 pounds or more, and are used primarily for drawing loads and other heavy work.

BREEDS AND THEIR CHARACTERISTICS

A breed of horses may be defined as a group of horses having a common origin and possessing certain well-fixed, distinctive, uniformly transmitted characteristics that are not common to other horses.

They have been bred for a particular purpose; individual ancestry is recorded by a registry association.

Many light horse breeds are based on Arabian and Thoroughbred foundations. Detailed information on early history of the breeds can be obtained from the secretaries of breed associations.

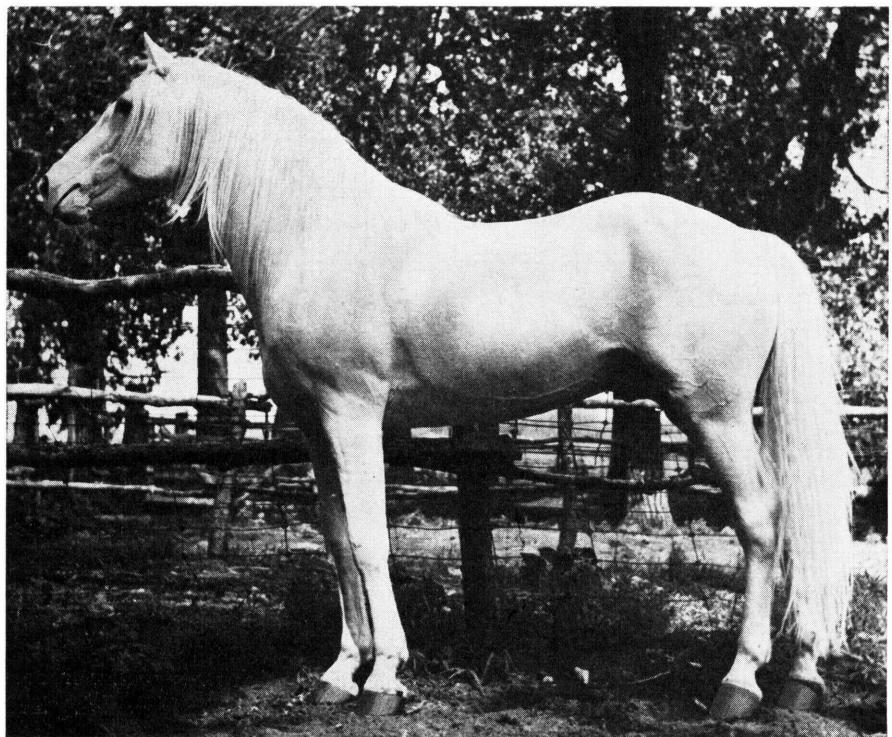
Representatives of each breed are illustrated in figures 1 to 15. Pertinent facts

about the breeds are summarized in table 1.

American Albino.—This new and less widely distributed breed of light horses is distinguishable by its color—snow-white hair, pink skin, and preferably dark eyes. American Albino horses are used both for riding and utility. They are widely used as "trained horses" for show because of their color.

American Saddle Horse.—Animals of this breed furnish an easy ride with great style and animation. They may be either three- or five-gaited. Three-gaited horses, by custom, are shown with their manes roached, or clipped short, and the

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Figure 1.—American Albino stallion "White Wings." Top show horse with famous White Horse Troupe.

upper part of their tails clipped or sheared close. Five-gaited horses, by custom, are shown with flowing manes and full-length tails. Members of the breed usually are bay, brown, chestnut, gray, or black. Most of them are 15 to 16 hands high and weigh 1,000 to 1,200 pounds. This breed is noted for a beautiful head carried on a long, graceful neck; short, rounded back; well-turned croup; high-set tail; and proud action.

Appaloosa.—Colorful spotting is characteristic of the breed. Most Appaloosas are white over the loins and hips, and have dark, round or egg-shaped spots ranging in size from specks up to 3 or 4 inches in diameter. The skin is mottled;

the hoofs are striped black and white, vertically; and the eye shows more white than in the other breeds, because more of the sclera of the eye is exposed.

Arabian.—Distinctive characteristics of the Arabian breed are medium to small size, beautiful head, short coupling, docility, great endurance, and a gay way of going. The usual height is 14 to 15 hands 1 inch and the weight, 850 to 1,100 pounds. Arabians may be bay, gray, chestnut, or, occasionally, white or black, but the skin is always dark. The breed is used primarily for saddle and stock purposes.

Cleveland Bay.—Horses of this breed always are solid bay, have black legs, and are used chiefly for general utility: Riding,

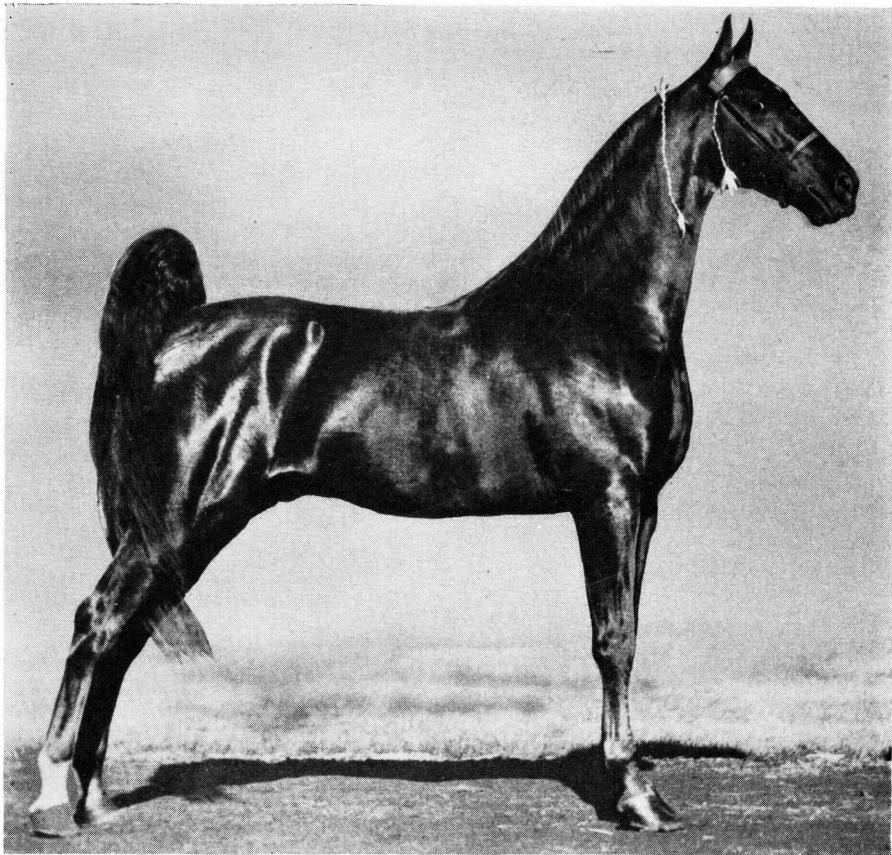
driving, and farmwork. The breed frequently is used in crossbreeding to produce heavyweight hunters.

Hackney.—High natural action (accentuated by skillful training, bitting, and shoeing) is first among the distinguishing features of this breed. Chestnut, bay, and brown are the most common colors. Some roans and blacks are seen. The Hackney varies more in size than any other breed, ranging from 12 to 16 hands high. The Hackney was bred to be a heavy harness horse—a large light horse

used for pulling carriages. It has become essentially a show animal. In the show ring, custom decrees that heavy harness horses be docked and have their manes pulled.

Morgan.—The Morgan is an American breed, which was developed in New England. The prepotent stallion Justin Morgan founded the breed. Very little, unfortunately, is known of his ancestry.

This breed always has been noted for smooth trim lines, good style, easy-keeping qualities, sturdiness, endurance, and



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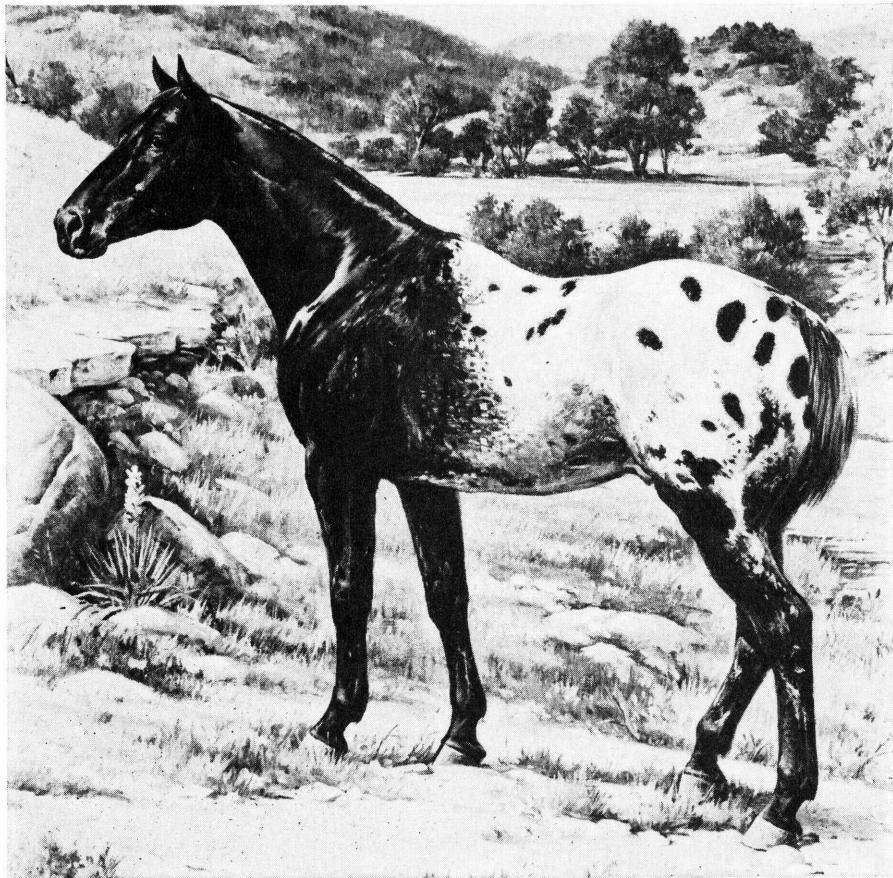
Figure 2.—American Saddle Horse "Beau Fortune." Winner of numerous five-gaited stakes. Highest priced stallion (\$50,000) in history of breed.

docility—the last without sacrifice of spirit and courage. Qualities characteristic of the breed are small ears, good widely-separated eyes, crested neck, well-sprung ribs, deep barrel, fairly level croup, full quarters, and strong, durable legs and feet. Morgans also have good natural knee action, with considerable speed at the trot. Color generally is chestnut, brown, bay, or black. Extensive white markings are uncommon. The average height is $15\frac{1}{2}$ hands and the average weight is 1,050 pounds. Repre-

sentative animals of the breed, however, may range from $14\frac{1}{2}$ to 16 hands in height and from 800 to 1,200 pounds in weight.

Morocco Spotted Horse.—Horses of this breed are spotted. The secondary color, white, must be not less than 10 percent, not including legs or a star in the face.

Palomino.—Palomino horses preferably are the color of a newly minted gold coin (horses three shades lighter or darker are acceptable), having light-



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Figure 3.—Appaloosa stallion "Chief of Four Mile." All performance Horse and First in Class twice, National Appaloosa Show.

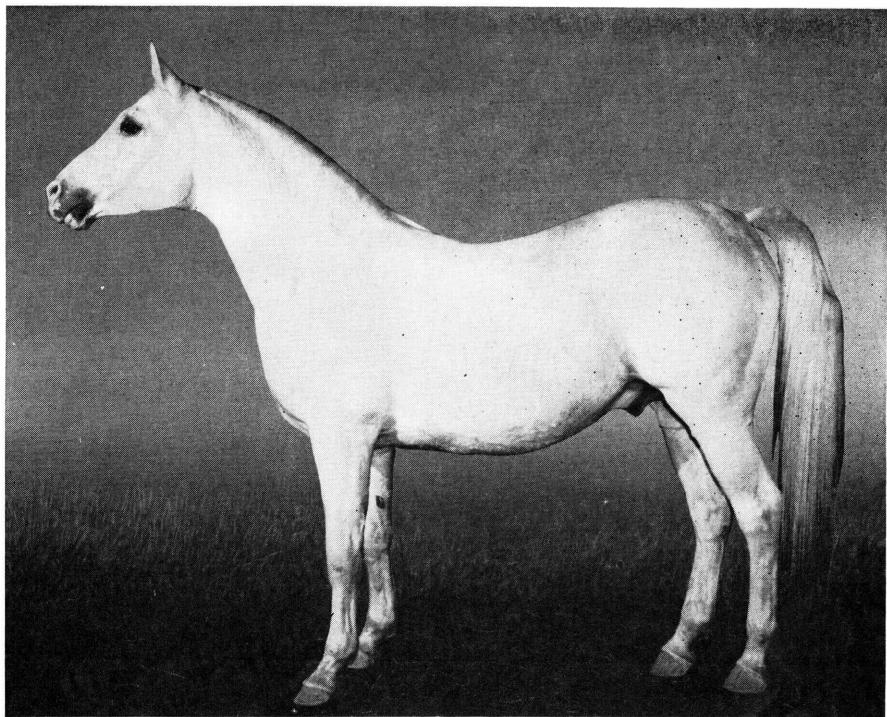


Figure 4.—Arabian stallion "Indraff."

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colored manes and tails (white, silver, or ivory, and having not more than 15 percent dark or chestnut hair in either). White markings on the face or below the knees or hocks are acceptable. The preferred height is $14\frac{1}{2}$ to 16 hands and the preferred weight, 1,000 to 1,200 pounds.

Quarter Horse.—Quarter Horses are stout in build; however, those of extreme "bulldog" type are undesirable. They seldom exceed 15 hands in height; they weigh 1,000 to 1,200 pounds. The short head is distinctive because of the small, alert ears and heavily muscled cheeks and jowls. Their build makes them ideal stock horses—agile and speedy animals that have enough weight and power to hold heavy steers that have been roped.

They have a calm disposition even during a roundup. The predominating colors are chestnut, sorrel, bay, and dun; palominos, blacks, browns, roans, and copper-colored animals are not uncommon.

Shetland Pony.—Shetland Ponies are less than $11\frac{1}{2}$ hands in height; most are less than $10\frac{1}{2}$ hands. There are two distinct types—one resembles a small draft horse and the other a small road-type horse. Colors run almost the gamut of horse colors, both broken and solid. Shetland Ponies are noted for their good dispositions.

Standardbred.—While animals of this breed generally are smaller, longer bodied, less leggy, and less refined than Thoroughbreds, they show more substance and ruggedness and have more tractable

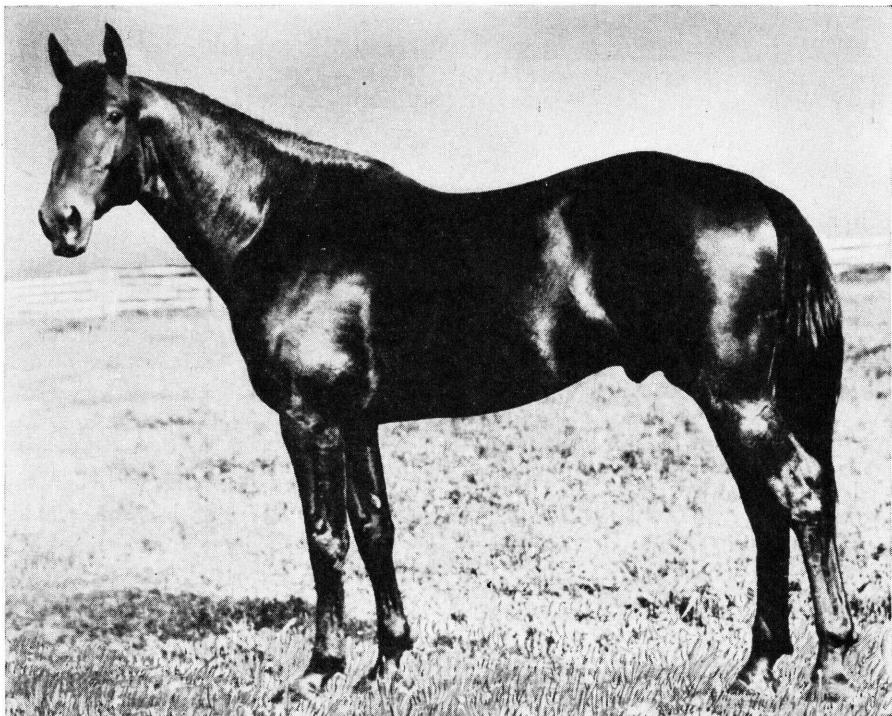
dispositions. They range in weight from 900 to 1,300 pounds, and in height from 15 to 16 hands. Bay, brown, chestnut, and black are the most common colors; grays, roans, and duns occur.

Tennessee Walking Horse.—Particular emphasis is placed on the running-walk gait in this breed. Tennessee Walking Horses average $15\frac{1}{2}$ hands in height and weigh 1,000 to 1,200 pounds. Many colors occur in the breed, including sorrel, chestnut, black, roan, white, bay, brown, gray, and golden. White markings on the feet and legs are common.

Thoroughbred.—Thoroughbreds possess a high degree of quality and refinement and are built for speed. Their bodies are long, deep chested, rather narrow, upstanding, and often a bit angular.

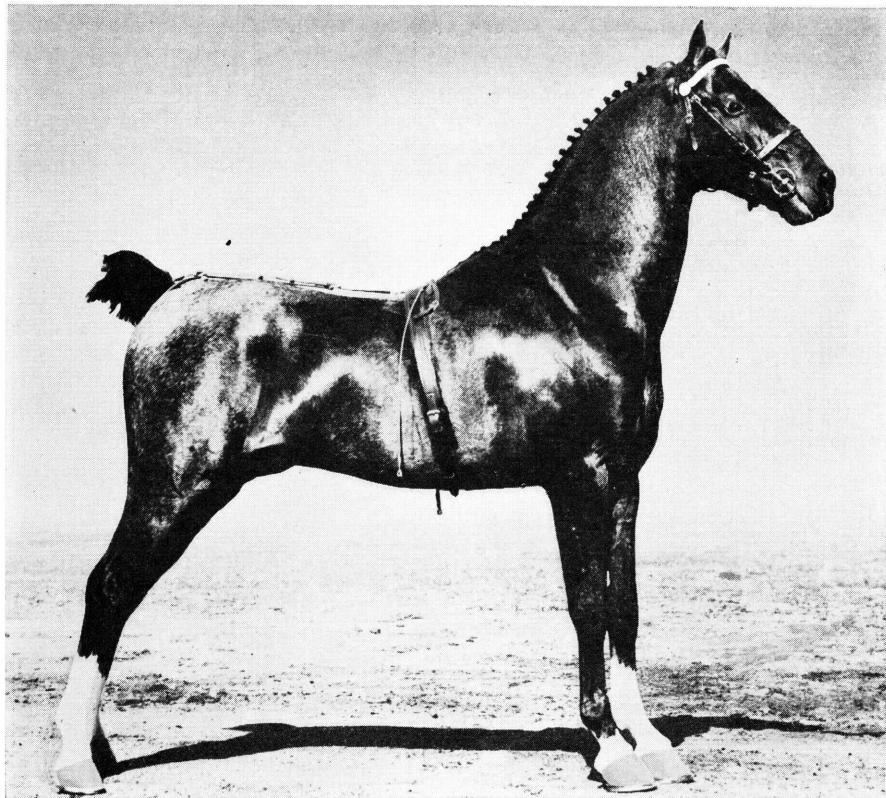
They are active, energetic, and very nervous. They are 15 to 17 hands high. In racing trim, Thoroughbreds may weigh 900 to 1,025 pounds; stallions in breeding condition may weigh up to 1,400 pounds or more. They are bay, brown, chestnut, black, or, less frequently, gray. White markings on the face and legs are common.

Welsh Pony.—Welsh Ponies are intermediate in size between Shetland Ponies and other light horse breeds. They usually range from 10 to 12 hands in height and weigh less than 600 pounds. Welsh Ponies have the build of miniature coach horses, being more upstanding than most Shetlands. They may be of any color except piebald or skewbald. Gaudy markings are not popular.



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Figure 5.—Cleveland Bay stallion "Cleveland Farnley."



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Figure 6.—Hackney stallion "Creation's King". Six times, All-American Hackney stallion.

PONIES

Generally speaking, the term "pony" refers to small horses under 14½ hands high and weighing 500 to 900 pounds. Not every small horse is a pony. Some small horses are merely small animals of established light horse breeds. Others are nondescript runts. In ponies, there is a distinct conformation; in miniature, they are either of draft horse, heavy

harness horse, or saddle or harness horse type.

Ponies are increasing in numbers more rapidly than larger horses. Three national mail-order houses sell them.

Breeding, feeding, care, and management are essentially the same for ponies as for larger light horses. The only differences result from their diminutive size.

Table 1.—Characteristics

Breed	Place of origin	Primary uses
American Albino.....	United States—White Horse Ranch, Naper, Nebr.	1. Variable according to type (both light and draft horse purposes).
American Saddle Horse.....	United States—Fayette, Ky.	1. Three- and five-gaited saddle horses. 2. Fine harness horses. 3. Pleasure horses.
Appaloosa.....	United States—Oregon, Washington, and Idaho from animals originating in Fergana, Central Asia.	1. Stock horses. 2. Pleasure horses. 3. Parade horses.
Arabian.....	Arabia.	1. Saddle horses. 2. Stock horses.
Cleveland Bay.....	England—Cleveland district of Yorkshire.	1. General utility horse for riding, driving, and farm work. 2. In crossbreeding to produce heavyweight hunters.
Hackney.....	England—Norfolk and adjoining counties on eastern coast.	1. Heavy harness or carriage horses. 2. For crossbreeding to produce hunters and jumpers.
Morgan.....	United States—New England States.	1. Saddle horses. 2. Stock horses.
Morocco Spotted Horse.....	United States—from animals of Hackney and Saddle Horse breeding.	1. Saddle horses. 2. Stock horses. 3. Pleasure horses. 4. Fine harness horses.
Palomino.....	United States—from animals of Spanish extraction.	1. Stock horses. 2. Parade horses. 3. Pleasure horses. 4. Saddle horses. 5. Fine harness horses.
Quarter Horse.....	United States.	1. Stock horses. 2. Racehorses.
Shetland Pony.....	Shetland Islands.	1. Children's mounts. 2. Harness-show purposes (American type).
Standardbred	United States.	1. Harness racing; trotting or pacing. 2. Harness horses in horse shows.
Tennessee Walking Horse.....	United States—middle basin of Tennessee.	1. Plantation walking horses. 2. Pleasure horses.
Thoroughbred.....	England.	1. Racehorses. 2. Stock horses. 3. Saddle horses. 4. Polo mounts. 5. Hunters.
Welsh Pony.....	Wales.	1. Children's mounts. 2. Harness show ponies.

of the light horse breeds

Distinguishing characteristics	Disqualifications
<i>Color:</i> Snow-white hair, pink skin, preferably dark eyes.	
<i>Color:</i> Bay, brown, chestnut, gray, or black; gaudy white markings are frowned upon. <i>Other:</i> Ability to furnish an easy ride with great style and animation; long, graceful neck and proud action.	
<i>Color:</i> Variable; usually white over loin and hips, having dark, round or egg-shaped spots thereon. <i>Other:</i> Eye encircled by white, skin mottled, hoofs striped vertically black and white.	Animals not having Appaloosa characteristics, and animals of draft horse or pony breeding.
<i>Color:</i> Bay, gray, and chestnut, occasionally white or black; white marking on head and legs common. <i>Other:</i> Beautiful head, short coupling, docility, great endurance, and a gay way of going.	
<i>Color:</i> Always solid bay and have black legs.	Any color other than bay.
<i>Color:</i> Chestnut, bay, and brown; occasionally roan and black; white markings desirable. <i>Other:</i> High natural action.	
<i>Color:</i> Bay, brown, black, and chestnut; extensive white markings are uncommon. <i>Other:</i> Style, trimness, easy-keeping qualities, sturdiness, endurance, docility, spirit, and courage.	
<i>Color:</i> Spotted. The secondary color must be not less than 10 percent not including white legs or star in face.	1. Animals under 14 hands 2 inches. 2. Animals of draft horse or pony breeding or showing these characteristics.
<i>Color:</i> Golden (color of newly minted gold, or very slightly lighter or darker). Mane and tail white, silver, or ivory, and having not more than 15 percent dark or chestnut hair in either. White markings on face or below knees acceptable.	Animals of draft horse or pony breeding, and offspring of piebald or albino breeding not eligible for registry.
<i>Color:</i> Chestnut, sorrel, bay, and dun are most common, but may be palomino, black, brown, roan, or copper colored. <i>Other:</i> Well muscled and powerfully built, small alert ear, and heavily muscled cheeks and jowls.	Pinto, Appaloosa, and albino colors ineligible for registry; also white markings on the underline.
<i>Color:</i> All colors, solid or broken. <i>Other:</i> Small size; good disposition.	
<i>Color:</i> Bay, brown, chestnut, and black are most common, but gray, roan, and dun are found. <i>Other:</i> Smaller and less leggy than Thoroughbreds, and having more substance and ruggedness.	
<i>Color:</i> Sorrel, chestnut, black, roan, white, bay, brown, gray, and golden; white markings on feet and legs are common. <i>Other:</i> Running-walk gait.	
<i>Color:</i> Bay, brown, chestnut, and black and, less frequently, gray; white markings on the face and legs are common. <i>Other:</i> Refinement in conformation; long, straight, well-muscled legs.	
<i>Color:</i> All colors, but not piebald or skewbald; gaudy white markings are not popular. <i>Other:</i> Small size; intermediate between Shetland ponies and other light horse breeds.	

HOW TO SELECT A HORSE

Great horse shows exert a powerful influence in molding the types of certain breeds of light horses. The development of breeds has been influenced largely by popularity, which in turn has been influenced by performance.

Relatively few horses are inspected and evaluated by experienced judges. Most of them are evaluated by persons who lack experience in judging but who have a practical need for the animal and take pride in selecting and owning a good sound horse.

Before buying a horse, the amateur should enlist the help of a competent horseman.

METHODS of SELECTION

There are four basic methods you can use in selecting a horse. Use more than one method where possible.

Pedigree

Selecting animals by pedigree, or on the basis of their ancestors, is of special importance where animals are either too thin or so young that their individual merit cannot be determined accurately. Pedigree may be the determining factor when selection is made between animals of comparable individual merit.

Show-Ring Winnings

Because training plays such an important part in the performance and show-ring winnings of light horses, this method of selection is of less value from a breeding standpoint than with other classes of farm animals. However, performance of a horse in the show ring can

be a valuable criterion in indicating his utility value.

Performance and Progeny Testing

Performance testing refers to testing or evaluating animals by measuring their actual performance—for example, by timing their speed over a certain distance. Progeny testing refers to the practice of selecting animals on the basis of the merit of their progeny.

Type of Individual

Selecting by individual excellence of body conformation and performance of the animal is the best single method of obtaining suitable horses. When animals are selected for breeding purposes, however, certain additional criteria should be taken into consideration.

To select a sound horse by type of individual—the method of selection used by the majority of people—you should:

Know the names of the various anatomical parts.—Master the language that locates and describes the parts of a horse (fig. 16). Know which of these parts are of major importance and what comparative evaluation to give the different parts.

Know what you want.—Have an ideal in mind. Be able to recognize desirable characteristics—and common faults (table 2).

Follow a definite procedure in examining.—Size up a horse by following a logical procedure, such as indicated in table 2; look the horse over in front view, in rear view, in side view, and in action. Check for soundness. In this way you will not overlook anything and you will

find it easier to retain observations as you make them.

When you are looking over several animals at the same time, keep them at a distance—secure a panoramic view.

Make a sound evaluation.—Evaluate the animal on each point listed under “what to look for,” and keep common faults and your ideal type in mind.

If several animals are involved, rank them in your mind by their rating on important points.

GAITS

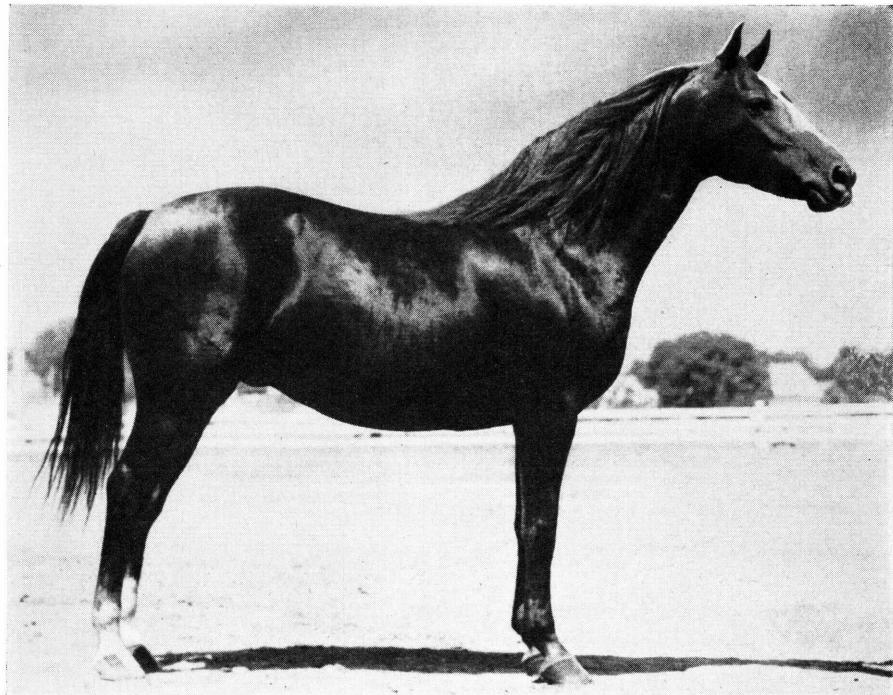
A gait is a particular natural or acquired way of going, characterized by a

distinctive rhythmic movement of feet and legs.

In proper show-ring procedure, horses are brought back to a walk each time before they are called upon to execute a different gait. An exception sometimes is made in five-gaited classes—the rack may be executed from the slow gait.

Walk.—A natural, slow gait of four beats in which each foot leaves and strikes the ground at separate intervals. The walk should be springy, regular, and true.

Trot.—A natural, rapid, two-beat diagonal gait in which the front foot and the opposite hind foot take off together and strike the ground simultaneously.



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Figure 7.—Morgan mare “Bay State Wardissa.” Grand Champion mare, National Morgan Horse Show.

Table 2.—Light horse selection guide

What to look for	Ideal type	Common faults
Front view:		
1. Head	<ol style="list-style-type: none"> 1. Head well proportioned to rest of body, refined, clean cut, with chiseled appearance; broad, full forehead with great width between eyes; jaw broad and strongly muscled; ears medium size, well carried, and attractive. 2. Refinement and femininity in brood mare; boldness and masculinity in stallion. 3. Deep, wide chest. 4. Straight, true, and squarely set front legs. 	<ol style="list-style-type: none"> 1. Plain headed; weak jaw. 2. Mares lacking femininity; stallion lacking masculinity. 3. Narrow chest. 4. Crooked front legs.
Rear view:		
1. Width of croup and through rear quarters.	<ol style="list-style-type: none"> 1. Wide and muscular over croup and through rear quarters. 2. Straight, true, and squarely set hind legs. 	<ol style="list-style-type: none"> 1. Lacking width and length over croup and muscling through rear quarters. 2. Crooked hind legs.
Side view:		
1. Style and beauty.	<ol style="list-style-type: none"> 1. High carriage of head, active ears, alert disposition, and beauty of conformation. 2. All parts well developed and nicely blended together. 3. Fairly long neck, carried high; clean cut about throat latch; with head well set on. 4. Sloping shoulders (about a 45° angle). 5. Short, strong back and loin, with long, nicely turned and heavily muscled croup, and high, well-set tail; withers clearly defined and of same height as high point over croup. 	<ol style="list-style-type: none"> 1. Lacking style and beauty. 2. Lacking in balance and symmetry. 3. Short, thick neck; ewe necked. 4. Straight in shoulders. 5. Sway backed; steep croup.

Side view—Continued:

6. Coupling-----	6. A short coupling as denoted by last rib being close to hip.
7. Middle-----	7. Ample middle due to long, well-sprung ribs.
8. Rear flank-----	8. Well let down in rear flank.
9. Arm, forearm, and gaskin-----	9. Well-muscled arm, forearm, and gaskin.
10. Legs, feet, and pasterns-----	10. Straight, true, and squarely set less; pasterns sloping about 45°; hoofs large, dense, and wide at heels.
11. Quality-----	11. Plenty of quality, as denoted by clean, flat bone, well-defined joints and tendons, refined head and ears, and fine skin and hair.
12. Breed type (size, color, shape of body and head, and action) true to breed represented.	12. Showing plenty of breed type.

12.

12. Lacking breed type.

12.

12.

All four feet are off the ground at the same time for a brief moment; the trotting horse thus seems to float through the air.

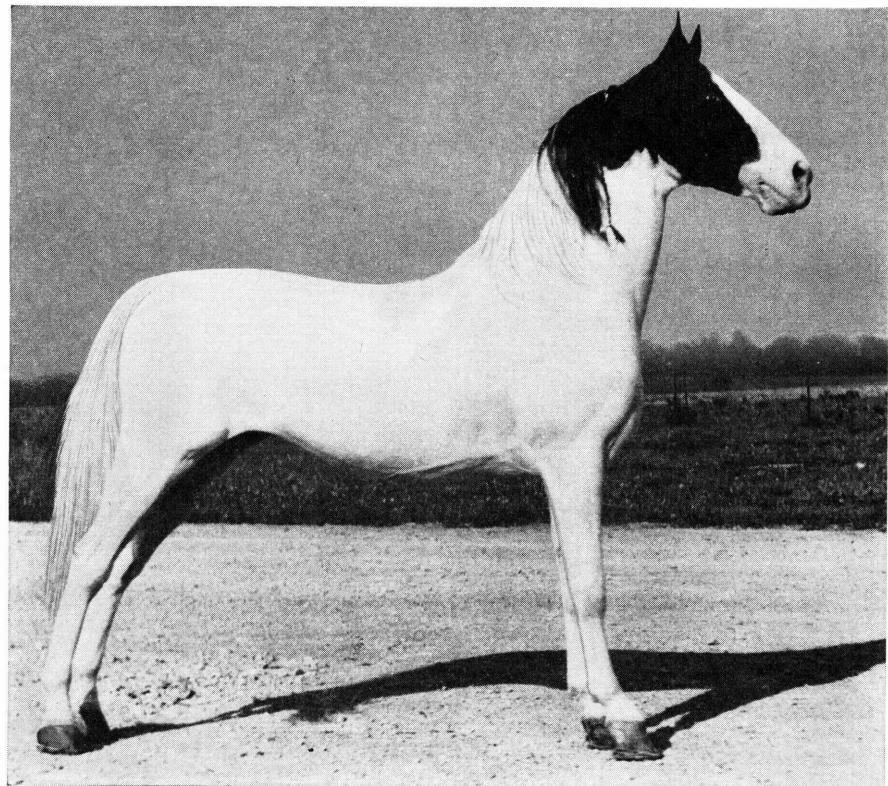
This gait varies considerably with different breeds. The trot of the Standard-bred is characterized by length and rapidity of individual strides; the trot of the Hackney shows extreme flexion of the knees and hocks that produces a high-stepping show gait.

Run or Gallop.—A fast, three-beat gait during which two diagonal legs are paired and strike the ground together between the successive beats of the other

two unpaired legs. All four feet are off the ground for a brief interval. The two unpaired legs that act independently—the forefoot with which the horse leads and the diagonal hindfoot—naturally bear more weight and are subject to more fatigue than the paired legs that act jointly.

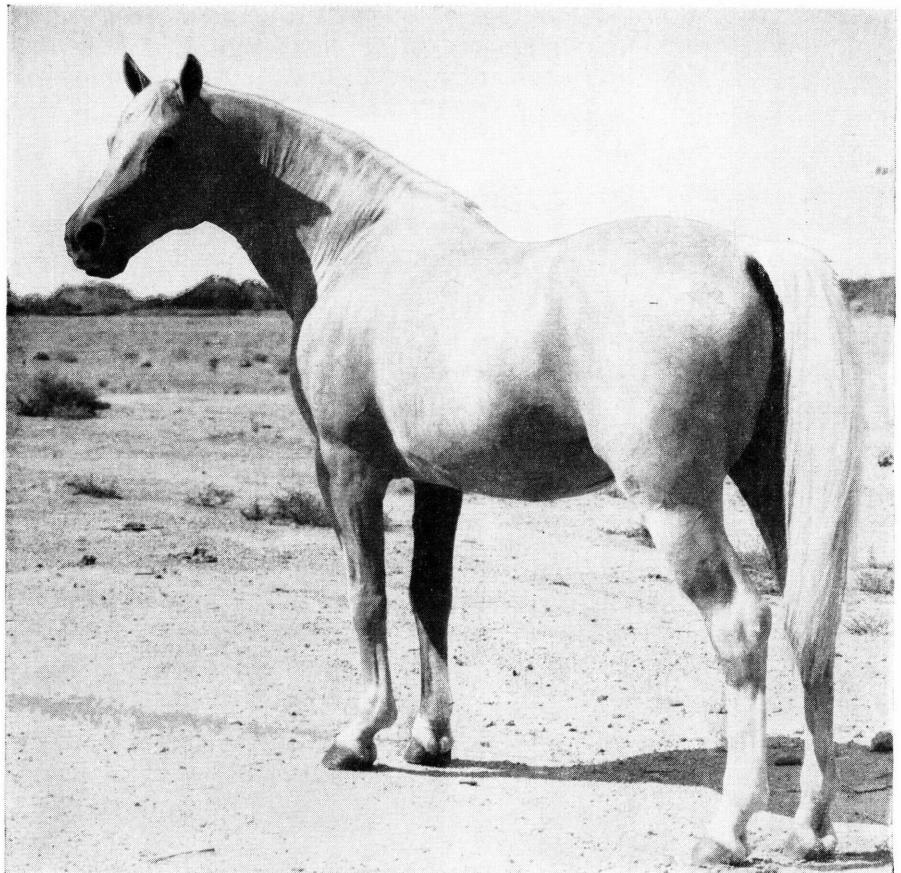
In the gallop, propulsion is chiefly in the hindquarters, although the fore-quarters sustain a tremendous jar as the horse lands. The gallop is the fast natural gait of horses.

Canter.—A slow, restrained gallop or run. Like the gallop, it is a three-beat



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Figure 8.—Morocco Spotted Horse stallion "Kanhwa." Best of breed, Waterloo (Iowa) Show.



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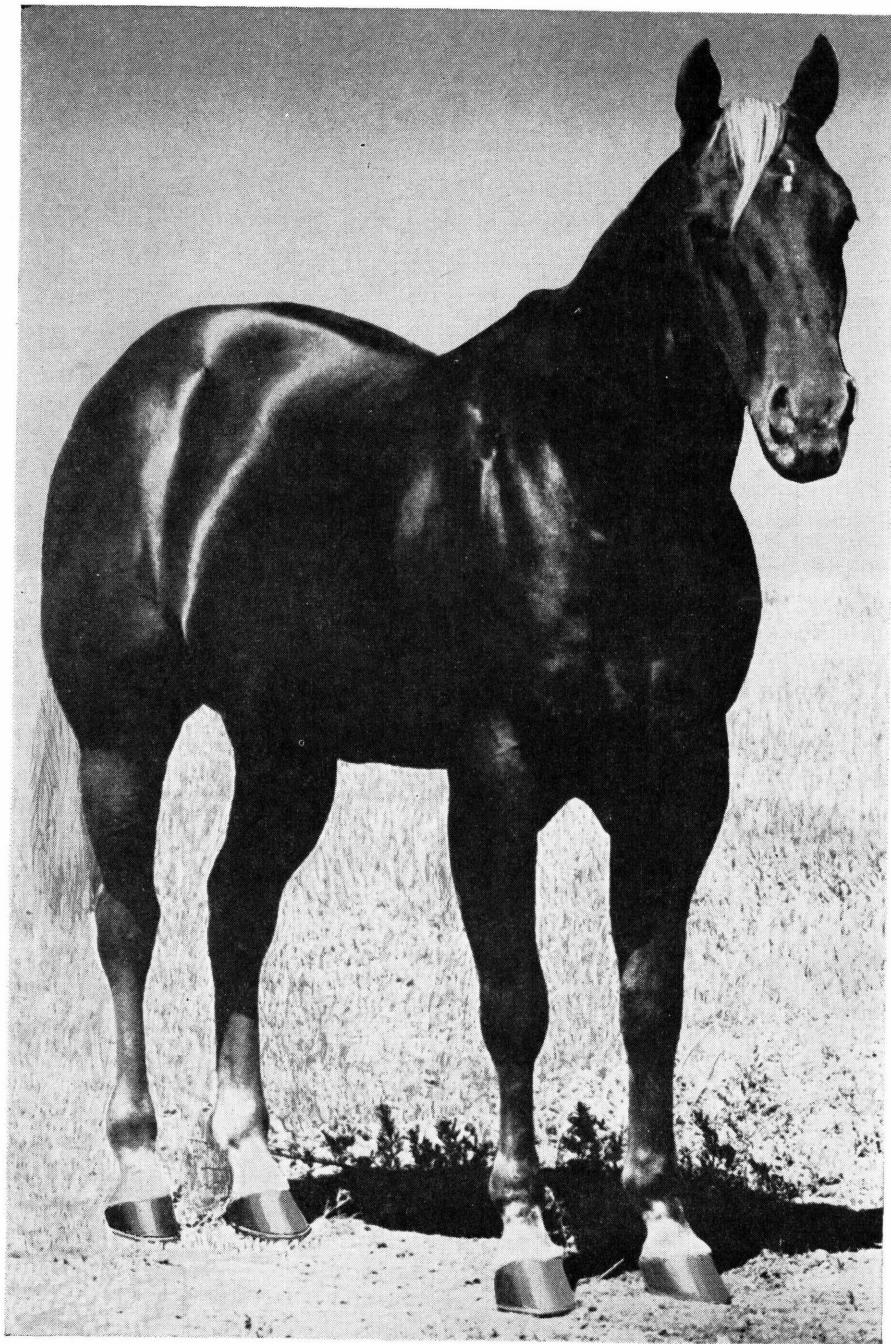
Figure 9.—Palomino stallion "Plaudit." Registered in both Palomino Horse Breeders of America Association and American Quarter Horse Association.

gait, and it puts unusual wear on the leading forefoot and its diagonal hindfoot. It is important frequently to change the lead. A well-trained horse will do this easily at the will of the rider.

In the show ring, the lead should be toward the inside of the ring, and the lead is changed by reversing direction of travel (when the ringmaster calls for "reverse and canter"). This gait should be executed in such a slow collected manner that the animal may perform in a relatively small circle.

Pace.—A fast two-beat gait in which the front and hind feet on the same side start and stop simultaneously. The feet rise just above the ground level. All four feet are off the ground for a split second and the horse appears to float forward.

The pace is faster than the trot but slower than the run or gallop. It allows for a "quick getaway" but it produces an objectionable side or rolling type of motion. This gait is not suited to travel in mud or snow; a smooth, hard footing



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Figure 10.—Quarter Horse stallion "Bill Cody." Grand Champion stallion in 14 major shows.

and easy draft are necessary for its best execution.

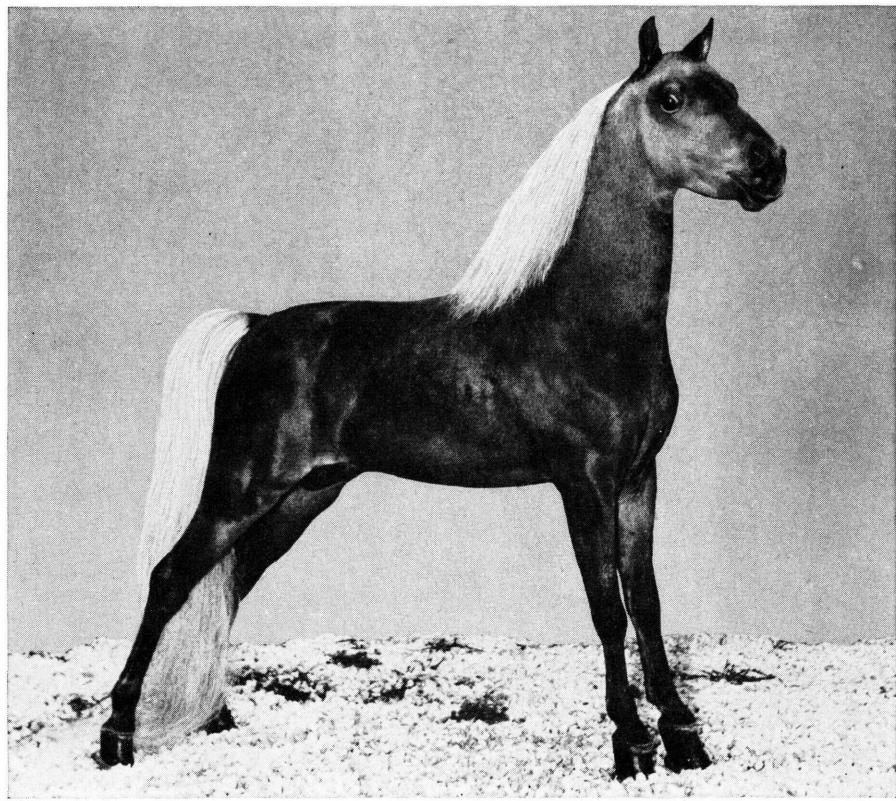
The pace once was popular in England but lost in favor soon after the development of the Thoroughbred early in the eighteenth century.

Stepping Pace (or Slow Pace).—A modified pace in which the objectionable side or rolling motion is eliminated because the two feet on each side do not move exactly together. Instead, it is a four-beat gait with each of the four feet striking the ground separately. The hind and front feet start almost together in the takeoff, but the hind foot touches the

ground slightly ahead of the front foot on the same side. This is the preferred slow gait for five-gaited show horses.

Fox Trot.—A low, short, broken type of trot in which the head usually nods. In executing the fox trot, the horse brings each hind foot to the ground an instant before the diagonal forefoot. This gait is accepted as a slow gait, but it is not as popular as the stepping pace.

Running Walk.—A slow, four-beat gait, intermediate between the walk and rack. The hind foot oversteps the front foot from 2 or 3 to as many as 18 inches, giving the motion a smooth, gliding



BN-5956

Figure 11.—Shetland Pony stallion "C-Jo's Topper." Grand Champion 5 times, Reserve Senior Champion 4 times, Blue Ribbon winner 83 times.

effect. This gait is characterized by a bobbing or nodding of the head, a flopping of the ears, and a snapping of the teeth in rhythm with the movement of the legs.

The running walk is easy on both horse and rider; it is the all-day working gait of the South, executed at a speed of 6 to 8 miles per hour. It is a necessary gait for Tennessee Walking Horses.

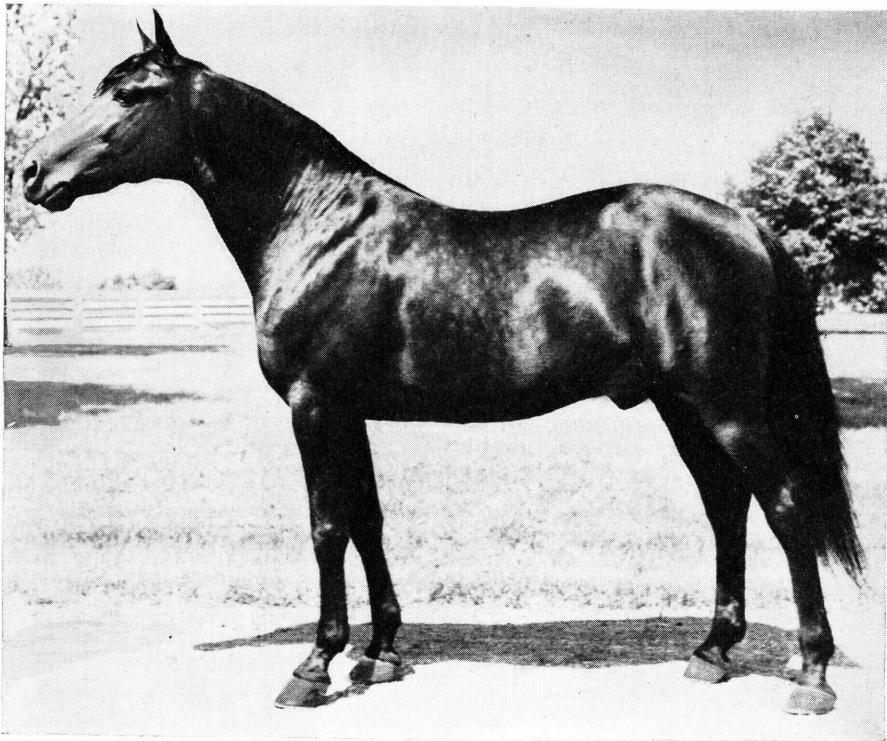
Rack.—A fast, brilliant, flashy, unnatural, four-beat gait in which each foot strikes the ground separately at equal intervals; known originally as the "single foot." The rack is easy on the rider, hard on the horse. It is, undoubtedly, the most popular gait in the American show

ring. On the tanbark, greater speed at the rack is requested with the command "rack on."

Traverse or Side Step.—The traverse or side step is simply a lateral movement of the animal without forward or backward movement. This step often helps the rider in opening and closing gates, lining up horses in the show ring, and taking position in a mounted drill or posse.

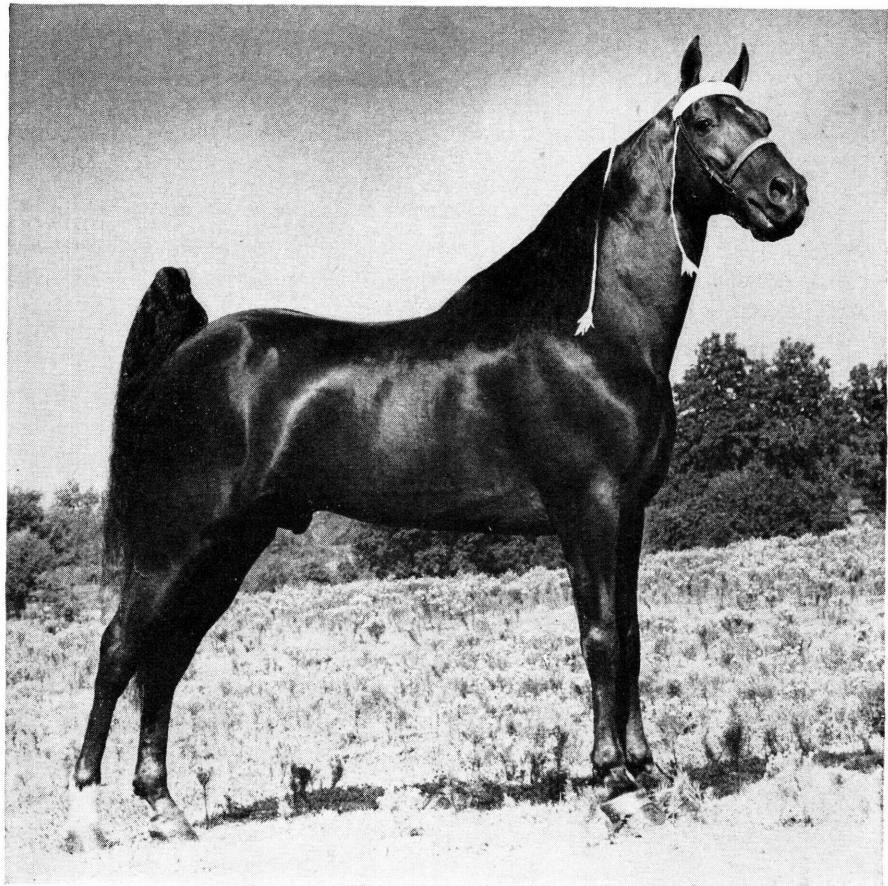
COMMON DEFECTS IN WAY OF GOING

The feet of a horse should move straight ahead parallel to an imaginary center



BN-5955

Figure 12.—Standardbred stallion "Star's Pride." World's Champion trotting stallion (1:57½).



BN-5953

Figure 13.—Tennessee Walking Horse stallion "Go Boy's Shadow." Twice Grand Championship Stake winner, Walking Horse National Celebration.

line drawn in the direction of travel. Any deviation from this way of going constitutes a defect.

Some defects are:

Cross-firing.—A "scuffing" on the inside of the diagonal forefeet and hindfeet; generally confined to pacers.

Dwelling.—A noticeable pause in the flight of the foot, as though the stride were completed before the foot reaches the ground; most noticeable in trick-trained horses.

Forging.—Striking forefoot with toe of hindfoot.

Interfering.—Striking fetlock or cannon with the opposite foot; most often done by base-narrow, toe-wide, or splay-footed horses.

Lameness.—A defect detected when the animal favors the affected foot when standing. The load on the ailing foot in action is eased and a characteristic bobbing of the head occurs as the affected foot strikes the ground.

Paddling.—Throwing the front feet outward as they are picked up; most common in toe-narrow or pigeon-toed horses.

Pointing.—Perceptible extension of the stride with little flexion; likely to occur in the long-strided Thoroughbred and Standardbred breeds—animals bred and trained for great speed.

Pounding.—Heavy contact with ground instead of desired light, springy movement.

Rolling.—Excessive lateral shoulder motion; characteristic of horses with protruding shoulders.

Scalping.—The hairline at top of hind-foot hits toe of forefoot as it breaks over.

Speedy Cutting.—The inside of diagonal fore and hind pastern make contact; sometimes seen in fast-trotting horses.

Stringhalt.—Excessive flexing of hind legs; most easily detected when a horse is backed.

Trappy.—A short, quick, choppy stride; a tendency of horses with short, straight pasterns and straight shoulders.

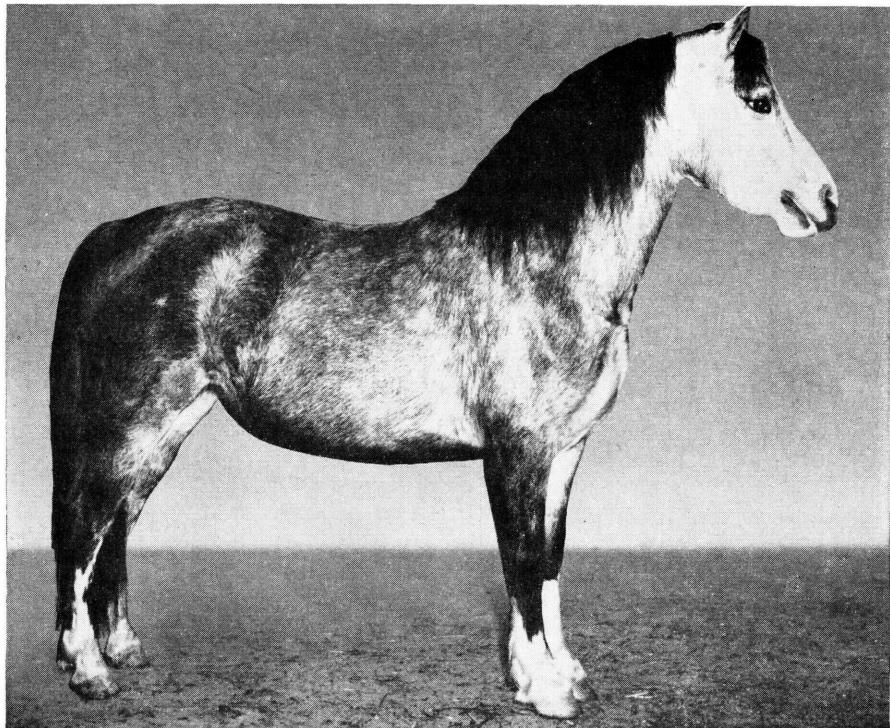
Winding or Rope-walking.—A twisting of the striding leg around in front of supporting leg, which results in contact like that of a rope-walking artist; often occurs in horses with very wide fronts.

Winging.—An exaggerated paddling particularly noticeable in high-going horses.



BN-5952

Figure 14.—Thoroughbred stallion "Swaps." Kentucky Derby Winner; won \$848,900 in racing purses; set 6 world's records.



BN-5954

Figure 15.—Welsh Pony mare "Princess Anne." Grand Champion Welsh and Grand Champion all Pony breeds, Maryland State Fair.

HOW TO MEASURE

Normal pertinent measurements are height, weight, girth, and bone.

Height

The height of a horse is the vertical distance from the highest point of its withers to the ground when the animal is standing squarely on a level area. The unit of measurement used in expressing height is the "hand," which is 4 inches. A horse measuring 60 inches is said to be 15 hands high.

You can estimate a horse's height if you know the exact number of inches from the level of your eyes to the ground. Knowing this, all you need do is stand beside the animal's front limbs and look

at the highest point of the withers; you can estimate the horse's height rather closely.

Weight

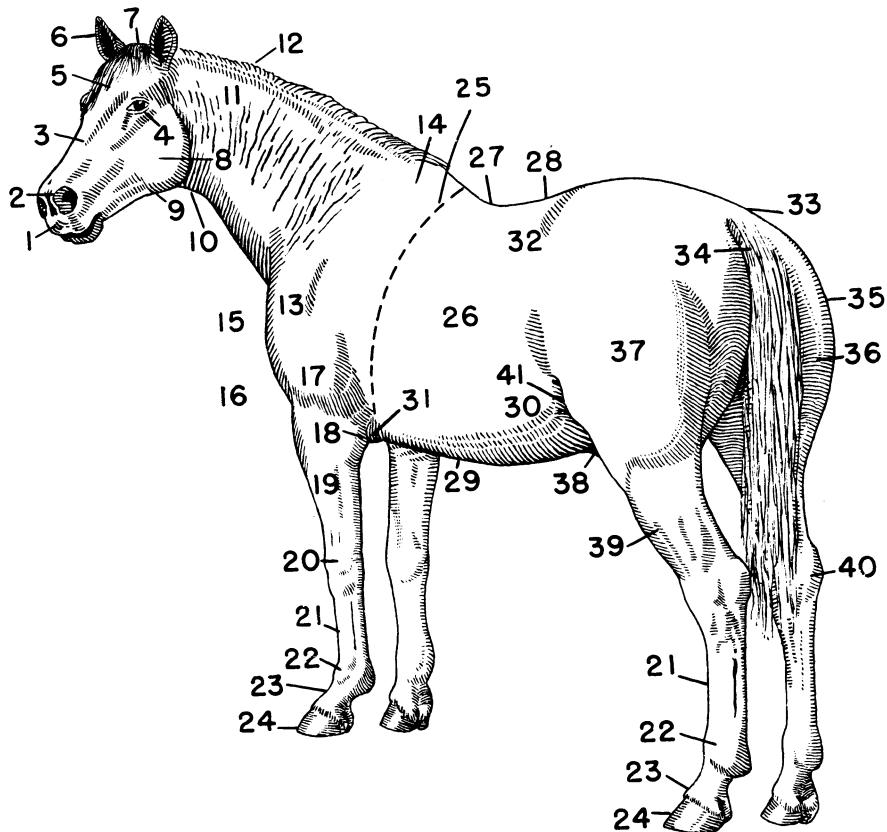
Although there are ways of estimating weight, it is best to use scales.

Girth

Girth is a measure of the circumference of the chest below a point back of the withers and in front of the back.

Bone

Size of bone usually is determined by placing a tape measure around the cannon bone halfway between the knee and fetlock joints. This measurement is in inches.



BN-5968

Figure 16.—Parts of a horse. 1. Muzzle 2. Nostrils 3. Face 4. Eye 5. Forehead 6. Ear 7. Poll 8. Cheek 9. Jaw 10. Throatlatch 11. Neck 12. Crest 13. Shoulders 14. Withers 15. Point of shoulder 16. Breast 17. Arm 18. Elbow 19. Forearm 20. Knee 21. Cannon 22. Fetlock joint 23. Pastern 24. Foot 25. Heart girth 26. Ribs 27. Back 28. Loin 29. Underline 30. Rear flank 31. Fore flank 32. Coupling 33. Croup 34. Tail 35. Point of buttock 36. Quarters 37. Thigh 38. Sheath 39. Gaskin 40. Hock 41. Stifle.

HOW TO DETERMINE AGE

The life span of horses averages 20 to 25 years—about one-third that of man. Horses generally are at their best between 3 and 12 years of age. This may vary because of individual differences in animals or because of differences in the kind of work they do.

The age of horses is, therefore, important to breeder, seller, and buyer.

The approximate age of a horse can be determined by noting time of appearance, shape, and degree of wear of temporary and permanent teeth. Temporary, or milk, teeth are easily distinguishable from permanent ones because they are smaller and whiter.

The best way to learn to determine age

Table 3.—Number and types of teeth in horses

Types of teeth	Number of teeth of mature male	Number of teeth of young animal, either sex
Molars or grinders-----	24	12
Incisors or front teeth (the two central incisors are known as centrals or nippers; the next two, one on each side of the nippers, are called intermediates or middles; and the last, or outer pair, the corners)-----	12	12
Tushes or pointed teeth (located between incisors and molars in males)-----	4	None

in horses is by examining teeth of individual horses of known ages.

A mature male horse has 40.² teeth. A mature female has 36.² A foal of either sex has 24. The mare does not have tushes as a rule (table 3).

Figures 17 to 31 are guides to determining age of horses by their teeth.

Even experienced horsemen cannot determine the age of an animal accurately after it is 12 years old. After this age, the teeth change from oval to triangular and they project or slant forward more and more as the horse becomes older.

Side views of the mouths of 5-, 7-, and 20-year-old horses are shown in figure 32.

An animal's environment can affect wear on teeth materially. Teeth of horses raised in dry sandy areas, for example, will show more than normal wear; a 5-year-old western horse may have teeth that would be normal in a

6-to-8-year-old horse raised elsewhere. The teeth of cribbers also show more than normal wear. It is hard to determine the age of such animals. The age of a horse with a parrot mouth, or undershot jaw, also is difficult to estimate.

BLEMISHES AND UNSOUNDNESSES

An integral part of selecting a horse lies in your ability to recognize common blemishes and unsoundnesses and your ability to rate the importance of each.

A thorough knowledge of normal, sound structure makes it easy to recognize imperfections.

Any abnormal deviation in the structure or function of a horse constitutes an unsoundness. From a practical standpoint, however, a differentiation is made between abnormalities that do and those that do not affect serviceability.

Blemishes include abnormalities that do not affect serviceability—such as wire cuts, rope burns, nail punctures, shoe boils, or capped hocks.

Unsoundnesses include more serious abnormalities that affect serviceability.

² Quite commonly, a small, pointed tooth, known as a "wolf tooth," may appear in front of each first molar tooth in the upper jaw, thus increasing the total number of teeth to 42 in the male and 38 in the female. Less frequently, two more "wolf teeth" in the lower jaw increase the total number of teeth in the male and female to 44 and 40, respectively.

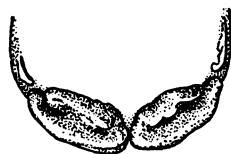


Figure 17.—Temporary incisors to 10 days of age: First or central upper and lower temporary incisors appear.

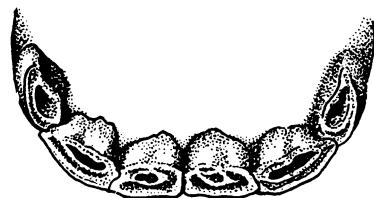


Figure 21.—Temporary incisors at 1½ years: Intermediate temporary incisors show wear.

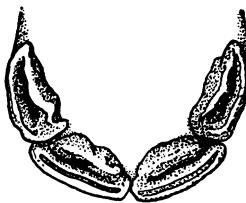


Figure 18.—Temporary incisors at 4 to 6 weeks of age: Second or intermediate upper and lower temporary incisors appear.

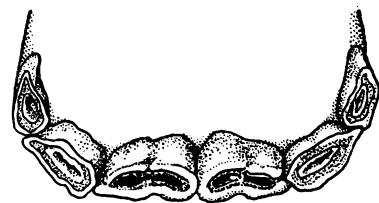


Figure 22.—Temporary incisors at 2 years: All show wear.



Figure 19.—Temporary incisors at 6 to 10 months: Third or corner upper and lower temporary incisors appear.

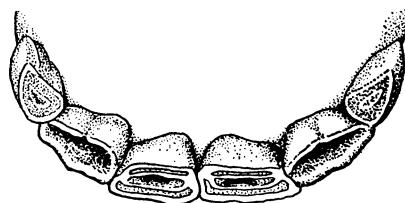


Figure 23.—Incisors at 4 years: Permanent incisors replace temporary centrals and intermediates; temporary corner incisors remain.

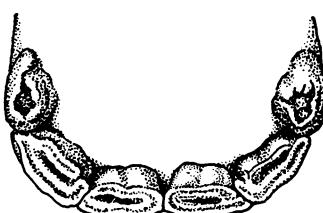


Figure 20.—Temporary incisors at 1 year: Crowns of central temporary incisors show wear.

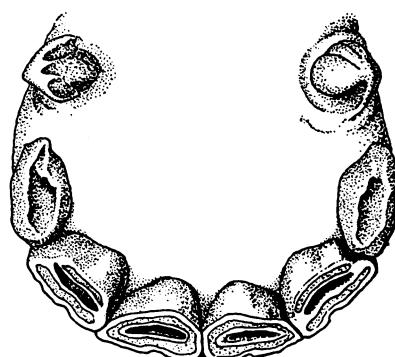


Figure 24.—Incisors at 5 years: All permanent; cups in all incisors.

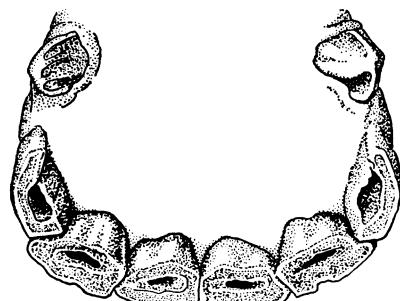


Figure 25.—Incisors at 6 years:
Cups worn out of lower central
incisors.

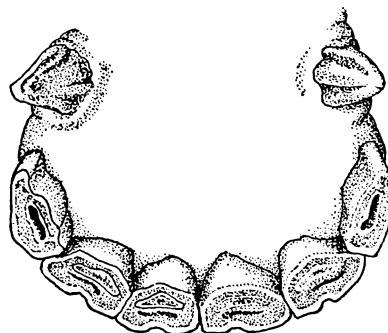


Figure 28.—Incisors at 9 years:
Cups worn out of upper central
incisors; dental star on upper
central and intermediate pairs.

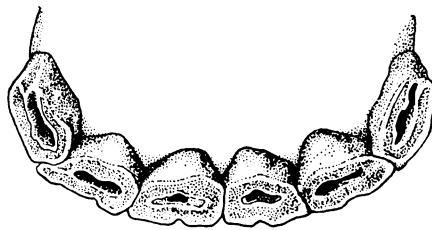


Figure 26.—Incisors at 7 years:
Cups also worn out of lower
intermediate incisors.

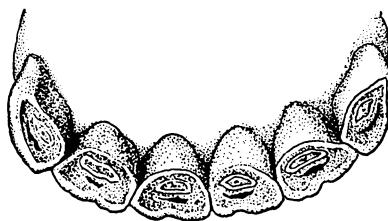


Figure 29.—Incisors at 10 years:
Cups also worn out of upper in-
termediate incisors, and dental
star is present in all incisors.

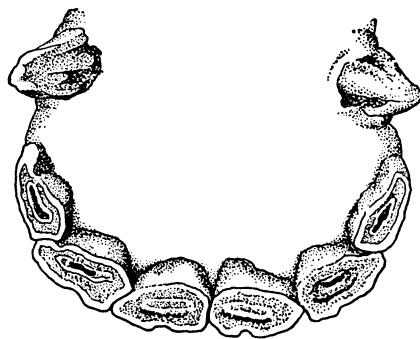


Figure 27.—Incisors at 8 years:
Cups worn out of all lower in-
cisors, and dental star (dark
line in front of cup) appears on
lower central and intermediate
pairs.

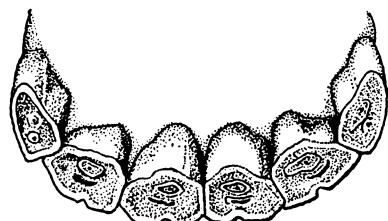


Figure 30.—Incisors at 11 or 12
years: Cups worn in all incisors
(smooth mouthed), and dental star
approaches center of cups.

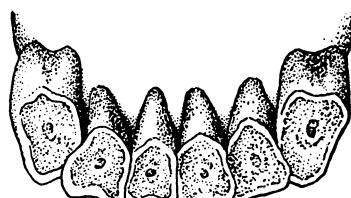


Figure 31.—Characteristic shape
of lower incisors at 18 years.

Figure 33 shows the location of common blemishes and unsoundnesses.

Consider the use to which you intend to put the animal before you buy a blemished or unsound horse.

STABLE VICES

Stable vices are bad habits of the horse in confinement. They may detract from the value of the animal.

Cribbing.—A horse that bites or sets his teeth against the manger or some other object while sucking air is said to be cribbing. This causes hard keeping and a bloated appearance. Horses with this vice are subject to colic.

A common remedy for cribbing is a strap buckled snugly around the horse's neck in a way that will compress the larynx when the head is flexed, but that will not cause any discomfort when the horse is not indulging in the vice.

Halter Pulling.—This term is applied to a tied horse that pulls back on its halter rope.

Kicking.—A true stable kicker apparently kicks just for the satisfaction it gets out of striking something with its

hind feet. Unusual excitement or injury occasionally causes a gentle horse to kick.

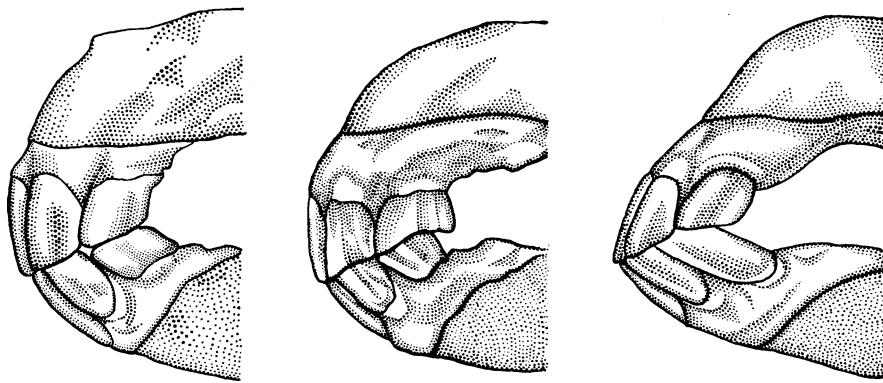
Tail Rubbing.—Persistent rubbing of the tail against the side of the stall or some other object is objectionable. Parasites, such as lice or rectal worms, may cause this. A "tail board" or parasite control helps break animals of this habit. A tail board is a board projecting from the wall of the stall high enough to strike just below the point of the buttock, instead of the tail, of the rubbing horse.

Weaving.—A horse's rhythmic swaying back and forth while standing in the stall is known as weaving.

Bolting.—Horses that eat too rapidly are said to be "bolting." This can be controlled by adding chopped hay to the animal's grain ration, or by putting stones at least as big as baseballs in its feed box.

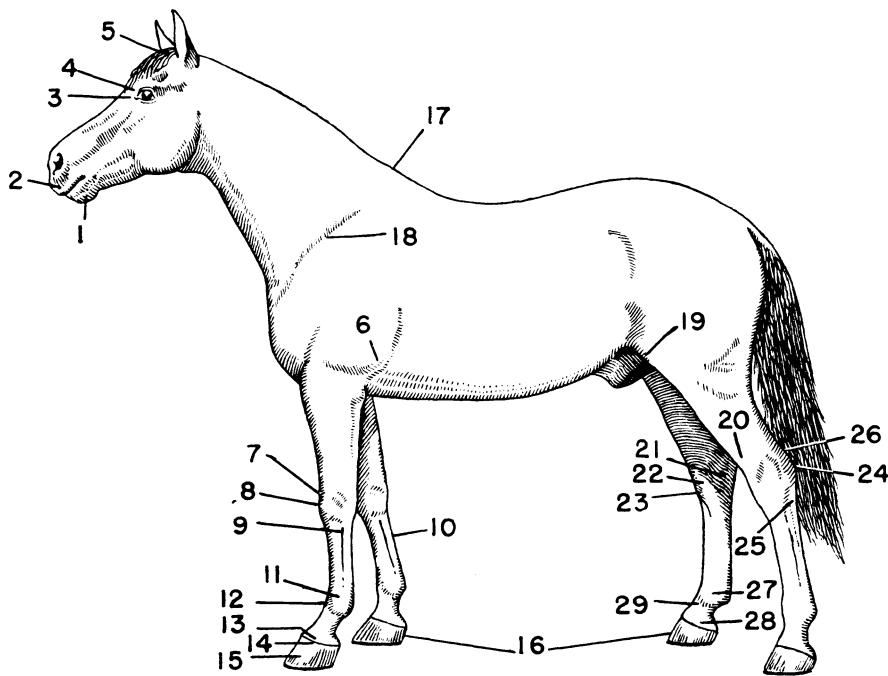
Other Vices.—Other vices often difficult to cope with, especially in older animals, are: balking, backing, rearing, shying, striking with the front feet, a tendency to run away, and objecting to harnessing, saddling, or grooming.

Most of these bad habits are caused by incompetent handling.



BN-5969

Figure 32.—Side view of 5-, 7-, and 20-year-old mouth. Note that as the horse advances in age the teeth change from nearly perpendicular to slanting sharply toward the front.



BN—5970

Figure 33.—Location of points of common unsoundnesses in horses.
 Head: Undershot jaw (1); Parrot mouth (2); Moon blindness (3); Blindness (4); Poll evil (5). Front limbs: Shoe boil (6); Calf knee (7); Knee sprung (8); Splints (9); Bowed tendons (10); Wind puffs (11); Cocked ankles (12); Ring bone (13); Quittor (14); Navicular disease (15). Feet (16): Contracted feet; Corns; Founder; Side bones; Thrush; Quarter or sand crack; Scratches or grease heel. Withers and shoulders: Fistulous withers (17); Sweeny (18). Rear limbs: Stifled (19); String-halt (20); Blood spavin (21); Bog spavin (22); Bone spavin or jack (23); Capped hock (24); Curb (25); Thoroughpin (26); Wind puffs (27); Ring bone (28); Cocked ankles (29). General: Heaves; Hernia; Roaring; Thick wind.

BREEDING HORSES

Horse owners intending to have mares bred and raise foals should know at least the basic elements of breeding.

STALLION

A stallion standing for outside service may become the parent of a great number of progeny. Therefore, the stallion should

be a superior individual in type and soundness. He also should be a purebred and a good representative of the breed selected. If it is an older horse that has been used in service, he should have proved to be a prepotent sire, by having produced a great many uniformly high-quality offspring of approved type and soundness.

MARE

Characteristics found in the brood mare are likely to be reflected in the offspring. It is fundamental that "like tends to produce like." The brood mare, in addition to being sound and of good type, should possess an abundance of femininity. She should be of good ancestry, whether purebred or grade.

Normal Breeding Habits

The average conception rate is less than 50 percent. This rate exceeds 70 percent only in the better establishments. A knowledge of the mare's normal breeding habits should help to improve this low fertility rate.

Age of Puberty.—Mares generally start to come in heat when they are 12 to 15 months old.

Signs of Heat.—Signs that a mare is in heat are relaxation of external genitals, more frequent urination, teasing of other mares, apparent desire for company, and a slight mucous discharge from the vagina.

A mare should be "tried" if there is question that she is in season. When a mare is shy, try to present her to the teaser every day, or every other day, as the breeding season approaches. A systematic plan saves much time and trouble.

Mares in foal may have false heat—breeding at this time may result in abortion. An experienced horseman who is familiar with the peculiarities of the individual animal can detect false heat when the mare is teased and can prevent such an accident.

Heat Periods.—Heat periods usually recur at about 21-day intervals. This interval may be as short as 10 days or as long as 37. The duration of the heat period averages 4 to 6 days, but it may range from 1 to 37 days. Some mares

remain in heat as long as 50 or 60 days in early spring.

Normal Breeding Season and Time of Foaling.—The best time to breed the mare is in spring when pastures are green and succulent. Mares at this season generally are putting on weight, their heat periods are more evident, and they are more likely to conceive.

A foal conceived in spring may be dropped on pasture the following spring with a minimum danger of becoming infected with parasites or diseases. Abundant fresh air, sunshine, and exercise contribute to the proper development of the youngster.

Showmen should consider having foals arrive at a time when they can be exhibited to best advantage. Most show classifications use January 1 as the base date in computing ages. Breeders who desire to sell well-developed Thoroughbred and Standardbred yearlings also must consider foaling time. Thoroughbred horses always are considered 1 year old on January 1 of the year following their birth.

Age To Breed Mares.—It is best to breed mares when they are 3 years old so they will foal when they are 4. Only an exceptionally well-developed filly should be bred as a late 2-year-old.

A filly bred as a late 2-year-old should be fed well so that her own immature body, as well as the developing fetus, will grow properly. Such animals usually should not be bred again the following year.

Brood mares that are properly cared for may produce regularly until they are 14 to 16 years old. In rare cases, mares may produce until they are 25 or older.

In selecting a brood mare, either obtain one 3 or 4 years old or make certain that the breeding habits of an older mare are regular.

Gestation Period.—The average gestation period of mares is 336 days—a little over 11 months. This period may vary as much as 20 to 30 days either way with individual mares.

A handy “rule of thumb” method you may use to figure the approximate date of foaling is to subtract 1 month and add 2 days to the date the mare was bred. Hence, a mare bred May 20 should foal April 22 the following year.

Breeding After Foaling.—Mares usually come in heat 7 to 11 days after foaling; some range from 3 to 13 days. Some horsemen plan to rebreed mares during this first recurrence of heat on about the ninth day if foaling has been normal and there has been no discharge or evidence of infection. They believe that mares rebred at this time are more likely to conceive than if bred later. An increasing number of good horsemen prefer to rebreed on the heat period following foaling—between the 25th and 30th day from foaling.

Mares not bred at the first heat period after foaling, or not conceiving, will come in heat approximately every 21 days thereafter.

Mares with infected genital tracts seldom are settled in service. If they are bred, this infection may spread to the stallion—and thence to other mares. If they conceive, there is danger that the foals will be undersized and poorly developed.

Conditioning the Mare for Breeding.—Conditioning before breeding is as important for the mare as for the stallion. Proper feed and exercise are keys to right conditioning.

To achieve high conception rates, mares should not be too thin or too fat. Try to check the natural tendency of barren or maiden mares to become overweight.

Condition mares by riding them under saddle or driving them in harness. When this is not practical, they usually will get enough exercise if allowed to run in a large pasture.

Care of the Pregnant Mare

The pregnant mare is inclined to be inactive. She should be separated from barren mares, which are likely to be playful and frisky.

Quarters for the Pregnant Mare.—The best place to keep a pregnant mare is in a pasture in which there is shade and water. A simple shelter is all she needs; an open shed is satisfactory in temperate climates, even in winter.

Exercise for the Pregnant Mare.—A pregnant mare should be allowed to roam large pastures so that she can get plenty of the kind of exercise she needs. Otherwise, until a day or two before she foals, she should be exercised for an hour daily under saddle or in harness.

Do not confine a pregnant mare to a stable or small, dry lot on idle days.

Care of the Mare at Foaling Time

Keep a written record of the date the animal is due to foal; remember the gestation period can range from 310 to about 370 days (average is 336). This record enables you to make plans for the foaling.

Giving birth is a critical time in the life of the mare. All the advantages gained by selecting genetically desirable and healthy parent stock and by providing the best environmental and nutritional conditions during the gestation period can be dissipated quickly through carelessness or ignorance at this time.

Signs of Approaching Parturition.—The first sign of approaching parturition may be distended udder 2 to 6 weeks before foaling time. Seven to ten days before foaling there generally is marked shrinking or falling away of the muscular parts of the top of the buttocks near the tailhead, and a falling of the abdomen. Although the udder may have filled out previously, the teats seldom fill out to the ends more than 4 to 6 days before foaling; generally there is no wax on the ends of the nipples until 2 to 4 days before parturition. The vulva becomes full and loose about this time. As foaling time draws nearer, milk drops from the teats. The mare is restless, breaks into a sweat, urinates frequently, and lies down and gets up.

Sometimes a foal may be dropped without warning.

Preparation for Foaling.—Arrange a foaling place 7 to 10 days before the event is expected. The ideal place for foaling during any warm period is a clean open pasture where the ground is dry and warm, where there is little danger of infection or mechanical injury to either mare or foal, and where there is no other livestock.

Avoid letting parturition take place in an unsanitary paddock or in a lot filled with droppings, because infections such as "navel-ill" often follow.

If you use a foaling stall, it should be 12- to 14-feet square and have a smooth, well-packed clay floor. It should be free of obstructions (such as low mangers or hay racks) on which the mare and foal might hurt themselves. If possible, it should be located away from other occupied stalls.

Scrub the foaling stall, the manger, and grain boxes with boiling lye water (8 ounces of lye to 20 gallons of water). Let them dry out before use.

Sprinkle the floor lightly with air-slaked lime. A clay floor may be harder to keep smooth and clean than one made of concrete, but a clay floor is much better for the foal's hoofs and provides safer footing for both mare and foal.

See that the foaling stall has plenty of clean, fresh bedding.

Stable the mare in the foaling stall at night for 7 to 10 days before the foal is expected so that she becomes accustomed to the new surroundings.

Feed at Foaling Time.—Reduce the mare's grain allowance slightly just before the foal is due. Use light and laxative feeds liberally, especially wheat bran. Feed a wet bran mash if the mare seems to be constipated.

Station of Attendant.—A good attendant is *near the mare during the parturition period but not where she can see him*. Some mares seem to resent the presence of an attendant at this time and delay foaling as long as possible.

Properly fed and exercised mares that have foaled before usually experience no difficulty in delivering. Young mares foaling for the first time, old mares, or mares that are either overweight or thin and rundown may have considerable trouble.

An attendant can help in preventing possible injury to the mare and foal, and can call a veterinarian if necessary.

Parturition.—Foaling begins with the rupture of the outer fetal membrane, which is followed by the escape of a large amount of fluid. The inner membrane surrounding the foal appears next and labor becomes more marked.

A mare foals rapidly in the normal presentation of her young. The entire birth procedure generally does not take more than 15 to 30 minutes. The mare usually will be down at the height of labor. The foal generally is born while

the mare is lying on her side with her legs stretched out.

In normal presentation of the foal, the front feet with heels down appear first, followed by the nose and head, then shoulders, middle (with back up), hips, and finally hind legs and feet.

Summon a veterinarian at once when the presentation is not normal. There is great danger that the foal will smother if birth is delayed. If the feet are presented with the bottoms up, it is a good indication that they are the hind ones and there is likely to be difficulty.

If the mare does not appear to be making any progress in parturition after reasonable time and effort, make an examination and give her help before she has exhausted her strength in futile efforts at expulsion. Often, the fetus dies when parturition is retarded because of twists or knots in the umbilical cord or is unduly delayed for other reasons.

When foaling has been normal, make certain that the foal is breathing and that the membrane has been removed from its mouth and nostrils. If the foal fails to breathe, give it artificial respiration immediately. This may be done by blowing into the foal's mouth, by working the ribs, by rubbing the body vigorously, and by lifting up the foal and dropping it gently.

The Afterbirth.—If the afterbirth is not expelled when the mare gets up, either tie it in a knot or tie it to the tail of the mare. This will keep the foal and mare from stepping on it and tearing the attachments in the uterus. Danger of inflammation of the uterus and "foal founder" in the mare is reduced.

The afterbirth usually is expelled within 1 to 6 hours after foaling. If it is retained longer than 6 hours, or if the mare seems lame, blanket the mare and call a veterinarian.

Often, retained afterbirth causes laminitis, which is marked by lameness. Treat this condition by feeding easily digested feed for 36 hours and by putting cold applications on the mare's feet.

Remove the afterbirth from the stall immediately and burn or bury in lime.

Cleaning the Stall.—Clean the stall when the foal and mare are up. Remove wet, stained, or soiled bedding. Sprinkle the floor with lime. Provide clean, fresh bedding.

These measures help prevent common types of joint-ill.

Feed and Water After Foaling.—The mare usually is hot and feverish immediately after foaling. Give her small quantities of lukewarm water at intervals. Be sure she does not drink too much.

Feed the mare lightly with laxative feeds for the first few days. The first feed can be half a ration of wet bran mash with a few oats, or a little oatmeal soaked in warm water. Bran and oats make the best grain ration for the first week. The milk flow, the demands of the foal, and the appetite and condition of the mare should govern the amount she is fed.

The mare usually can be back on full feed within 7 to 10 days after foaling.

Precautions.—As a precaution, take the mare's temperature a day or two after she has foaled. If she has much temperature (normal is about 101° F.), call a veterinarian. Regard with suspicion any discharge from the vulva.

Drying Up the Mare

Permanently separate the mare and foal at weaning time. Usually, foals are weaned between 4 and 6 months of age.

Rub an oil preparation (camphorated oil or a mixture of lard and spirits of camphor) on the udder. Take the mare

from the foal and place her on grass hay or less lush pasture.

Examine the udder at intervals and place oil on it but do not milk it out for 5 to 7 days. The udder will fill up and get tight, *but do not milk it out*. At the end of 5 to 7 days, when the bag is soft and flabby, milk out the little secretion that remains (perhaps not more than half a cup).

THE FOAL

Immediately after the foal has arrived and has started breathing, it should be thoroughly rubbed and dried with warm towels. It then should be placed in one corner of the stall on clean, fresh straw. The mare usually will be less restless if this corner is in the direction of her head.

Protect the eyes of a newborn foal from bright light.

Treating the Navel Cord

If left alone, the navel cord of the newborn foal usually breaks within 2 to 4 inches of the belly. If it does not break, cut it about 2 inches from the belly with clean dull shears or scrape it in two with a knife. A torn or broken blood vessel will bleed very little, but one cut directly across may bleed excessively. Treat the severed cord with tincture of iodine immediately, then leave mare and foal alone so they can rest and gain strength.

Value of Colostrum

Colostrum is milk secreted by the dam for the first few days following parturition. It differs from ordinary milk in that it is more concentrated, is higher in protein content (especially in globulins), and is richer in vitamin A.

Colostrum differs from ordinary milk in two other ways: (1) It contains anti-

bodies that protect the foal temporarily against certain infections. (2) It is a natural purgative; thus it removes fecal matter accumulated in the digestive tract.

Do not dissipate these benefits of colostrum by "milking out" a mare shortly before foaling time.

The First Nursing

The strong, healthy foal will be on its feet and ready to nurse usually within $\frac{1}{2}$ to 2 hours after birth.

Before allowing it to nurse for the first time, wash the mare's udder with a mild disinfectant and rinse thoroughly with clean, warm water.

A big, awkward foal occasionally needs assistance and guidance when it nurses the first time. If the foal is stubborn, forced feeding will be useless. Back the mare onto additional bedding in one corner of the stall and coax the foal to the teats with a bottle and nipple. An attendant may hold the bottle while standing on the opposite side of the mare from the foal.

A very weak foal should be given the mare's first milk even if it is necessary to draw this milk into a bottle and to feed the foal a time or two by nipple. An attendant sometimes must steady a foal before it will nurse.

Bowel Movement

Regulation of the bowel movement in the foal is very important. Constipation and diarrhea (scours) are common ailments.

Excrement impacted in the bowels during prenatal development—material called meconium—may kill the foal if it is not eliminated promptly. A good feed of colostrum usually will cause natural elimination. This is not always the case,

however, especially when foals are from stall-fed mares.

Observe the foal's bowel movement within 4 to 12 hours after its birth. If there has been no fecal discharge by this time, and the foal seems sluggish and fails to nurse, give it an enema. Use a quart of water at blood heat (101° F.) to which a little glycerin has been added. Inject the solution with a baby syringe (one having about a 3-inch nipple) or a tube and can. Repeat treatment until normal yellow feces appear.

If the foal is scouring, reduce the mare's ration and take away part of her milk at intervals by milking her out.

Diarrhea or scours in foals may result either from infectious diseases or dirty surroundings. It is caused by an irritant in the digestive tract that should be removed. Give an astringent only in exceptional cases.

Conditions that may cause diarrhea are contaminated udder or teats, nonremoval of fecal matter from the digestive tract, fretfulness or temperature above normal in the mare, an excess of feed affecting the quality of the mare's milk, a cold damp bed, or continued exposure to cold rains.

Care of the Suckling Foal

Weather conditions permitting, there is no finer place for a mare and foal than on pasture. As with all young mammals, milk from the dam assures the foal of the best possible start in life.

When the foal is between 10 days and 3 weeks old, it will begin to nibble on a little grain and hay. To promote thrift and early development, and to avoid any setback at weaning time, encourage the foal to eat supplementary feed as early as possible. The foal should be provided

a low-built grain box especially for this purpose; or, if on pasture, the foal may be creep fed.

Rolled oats and wheat bran, to which a little brown sugar has been added, is especially palatable as a starting ration. Crushed or ground oats, cracked or ground corn, wheat bran, and a little linseed meal (see table 4) may be provided later with good results.

Give the foal good hay (preferably a legume) or pasture, in addition to its grain ration. The normal healthy foal should be consuming $\frac{1}{2}$ pound of grain daily per 100 pounds live weight at 4 to 5 weeks of age. This ration should be increased by weaning time to about $\frac{3}{4}$ pound or more per 100 pounds of live weight.

The exact amount of ration varies with the individual, the type of feed, and the development desired.

Foals normally attain one-half of their mature weight during the first year under such a system. Most breeders of Thoroughbreds and Standardbreds plan to have their 2-year-old animals at full height. Such results require liberal feeding from the beginning. A foal stunted in the first year by insufficient feeding cannot be developed properly later in life. It is well recognized that forced development must be done expertly if the animals are to remain durable and sound.

Training the Foal

If you start training the foal early, you will have a better-disciplined, more serviceable horse.

Give the foal its lessons one at a time and in proper sequence; that is, be sure your pupil completely masters one lesson before you go on to the next one.

Put a well-fitting halter on the foal when it is 10 to 14 days old. When the animal has become accustomed to the halter, in a day or so, tie the foal securely in the stall beside the mare. Try to keep the foal from freeing itself from the rope or from becoming tangled up in it.

Leave the foal tied 30 to 60 minutes each day for 2 or 3 days. Groom the animal carefully while it is tied. Rub each leg and handle each foot so that the foal becomes accustomed to having its feet picked up.

After the foal has been groomed, lead it around with the mare for a few days, then lead it by itself. Lead it at both the walk and the trot.

Many breeders of Thoroughbreds teach a foal to lead simply by leading it with the mare from the stall to the paddock and back again.

At this stage of the training, be sure the foal executes your commands to stop and go as soon as you give them. When halted, make the foal stand in show position—squarely on all four legs with its head up.

Use all your patience, gentleness, and firmness in training the foal. Never let your temper get the best of you.

Weaning

Foals usually are weaned at 4 to 6 months of age. Thorough preparation facilitates weaning.

It may be advisable to wean the foal at a comparatively early age if either foal or mare is not doing well, if the mare is being given heavy work, or if the mare has been rebred on the ninth day after foaling.

If by using creep or separate grain box the foal has become accustomed to eating a considerable amount of grain and hay (about $\frac{3}{4}$ pound of grain daily per 100 pounds live weight), weaning will cause only a slight disturbance or set-

back. If the ration of the dam is cut in half a few days before the separation, her udder usually will dry up without difficulty.

Move the mare to new quarters from the stall it shares with the foal. Remove anything in the stall on which the foal might hurt itself during the first unhappy days that it lives alone.

Make the separation of the foal from the mare complete and final. If the foal sees, hears, or smells its dam again, you will have to begin the separation process all over again.

Turn the foal out on pasture after a day or two. If there are several weanlings in this situation, some of them might get hurt while running and frolicking together in the pasture. Guard against this by first turning out 2 or 3 less desirable individuals and letting them tire themselves; then turn out the rest.

At this stage, if numerous weanlings are involved, separate them by sexes. Put the more timid ones by themselves.

Do not run weanlings with older horses.

Castration

Have a veterinarian perform this operation.

A colt may be castrated when only a few days old, but most horsemen prefer to delay the operation until the animal is about a year old. While there is less real danger to the animal and much less setback with early altering, it results in imperfect development of the foreparts. Leaving the colt entire for a time results in more muscular, bold features and better carriage of the foreparts.

Weather and management conditions permitting, the time of altering should be determined by the development of the individual. Underdeveloped colts may be left entire 6 months or even a year longer than overdeveloped ones.

Breeders of Thoroughbred horses usually prefer to race them first as uncastrated animals.

There is less danger of infection if colts are castrated in the spring soon after they are turned out on clean pasture and before hot weather and "fly time" arrive. This is extremely important in southern States because of the danger of screw-worm infestation.

Breaking

A foal will not need "breaking" if it has been trained properly.

When you can saddle or harness a young horse with satisfactory ease, it is because you have followed the suggested training program. Saddling and harnessing are just additional steps.

A good time to harness and work the horse for the first time is during the winter as a rising 2-year-old.

FEEDING HORSES

Feeding practices vary from one locality to another—and among horsemen. The size of individual horses, the use to which they are put, and the size of the enterprise also make for differences.

Fundamentally, the nature of horses remains the same. For this reason, successful feeding in one stable is not much different from successful feeding in another stable. Nor are there as many secrets as some horsemen may think.

Skill and good judgment are essential in feeding horses. Horsemen may secure widely different results under similar conditions. Horses may be in the best of condition in one stable—and have animation, nerve, speed, and endurance. In another stable, listless animals with dull eyes and rough coats testify to lack of judgment in their feeding and management. The unsatisfactory condition in the latter stable may not mean that the owner tried to economize on feed; horsemen who feed their animals the most economically may have the best horses.

FEEDS

Because horses have small digestive tracts, they cannot eat as much roughage as cattle. Feeds should not add surplus

body weight or large, paunchy stomachs.

A light horse feeding guide is given in table 4. In selecting rations, compare them with commercial feeds. If you use small quantities or have little room for storage, you may find it more satisfactory to buy ready-mixed feeds.

More than one kind of hay makes for variety and appetite appeal. In season, any good pasture can replace part or all of the hay unless work or training conditions make substitution impractical.

Good-quality oats and timothy hay always have been considered standard feeds for light horses. Feeds of similar nutritive properties can be interchanged in the ration as price relationships warrant. This makes it possible to obtain a balanced ration at lowest cost. Some of these feeds are grains (oats, corn, barley, wheat, and sorghum), protein supplements (linseed meal, soybean meal, and cottonseed meal), and hays of many varieties.

During winter months, add a few sliced carrots to the suggested ration, an occasional bran mash, or a small amount of linseed meal. Also, use bran mash or linseed meal to regulate the bowels.

The discussion of rations in this section is devoted primarily to the feeding

of light horses. General principles given apply just as well to feeding draft horses and mules. Feeding requirements for draft animals, however, are less exacting.

The proportion of concentrates must be increased and the roughages decreased as energy needs rise with the greater amount, severity, or speed of work. A horse that works at a trot needs considerably more feed than one that works at a walk. For this reason, draft animals that perform most of their work at a walk require somewhat less grain and more hay in proportion to body weight than light horses that travel faster. Also, from an esthetic standpoint, large stomachs that result from high roughage rations are less objectionable on draft animal than on light horses.

The rations given in table 4 are suited equally to draft horses and mules. For draft horses at work use the lower limits of grain and the upper limits of hay. Keep the total allowance of concentrates and hay within the range of 2.0 to 2.5 pounds daily per 100 pounds live weight.

Feeds for work horses and mules should be confined largely to those grown on the farm or ranch. Such feeds are cheaper and, by using proper judgment, you can get a balanced ration. Give mules about the same kinds and amounts of feeds as horses. They are less fastidious in taste and will eat feeds that horses will not eat. Mules also are less likely to founder or overeat than horses. Consequently, you can allow mules free access to a feeder filled with corn or other concentrated feeds.

MINERALS

Horses sometimes need special mineral supplements to their feed. Do not feed horses either more or less minerals than they need.

All classes and ages of horses should have access to a two-compartment box containing minerals. One compartment should have salt (iodized in iodine-deficient areas), and the other should contain a mixture of 2 parts steamed bone meal (or other calcium-phosphorus supplement) and 1 part salt (the salt is for palatability). A good commercial mineral may be fed if desired.

VITAMINS

Certain vitamins are necessary to the growth, development, health, and reproduction of horses. High-quality, leafy, green forages plus plenty of sunshine generally give horses all the vitamins they need. Horses get carotene (which the animal can convert to vitamin A) and riboflavin from green pasture, green hay (not over a year old), and the judicious use of mold-free grass or legume silage. Horses get vitamin D from exposure to sunlight, and from feeding on sun-cured hay.

Severe deficiency of vitamin A may cause night blindness, reproductive failure, poor or uneven hoof development, nerve degeneration, and a predisposition to respiratory disease. There is some evidence that deficiency of this vitamin may cause or contribute to certain bone and joint disorders such as rheumatic disease, osteoarthritis, stringhalt, certain types of lameness, and eroded joints.

Foals sometimes develop rickets because of insufficient vitamin D, calcium, or phosphorus. This can be prevented by exposing the animal to direct sunlight as much as possible, by allowing it free access to a suitable mineral mixture, and by providing it good-quality, sun-cured hay or luxuriant pasture grown on well-fertilized soils. In northern areas lacking in adequate sunshine, many leading

horsemen provide the foal with a vitamin D supplement such as cod liver oil or irradiated yeast.

A deficiency of riboflavin may cause periodic ophthalmia (moon blindness), but it is suspected that lack of this vitamin is not the only factor in producing the condition. Prevent periodic ophthalmia by feeding green hays and green pastures, feeds high in riboflavin, or by adding crystalline riboflavin to the ration at the rate of 40 mg. per horse per day. Other vitamins of the B complex may be essential. Healthy horses usually get enough of them either in natural rations or by synthesis in the intestinal tract.

Horses seem to require vitamin E, but most practical rations contain liberal quantities of it—perhaps enough except under conditions of stress or where there is interference with its utilization. Rather than buy and use costly vitamin E concentrates indiscriminately, therefore, add them to the ration only on the advice of a competent nutritionist or veterinarian.

Under some conditions, there is evidence that alpha tocopherol succinate (a relatively stable form of vitamin E) is effective in (1) increasing the conception rate of mares, (2) improving the breeding behavior, sex drive, sperm quality, and condition of stallions, and (3) improving the stamina, temperament, feed consumption, and track performance of race horses. Where needed, the recommended daily doses of alpha tocopherol succinate in the feed are: Stallions and brood mares, 600 to 1,000 I. U. beginning a few weeks before breeding; and race horses in training, 2,000 I. U.

WATER

Horses should have ample quantities of clean, fresh, cool water. They will drink 10 to 12 gallons daily; the amount

depends on weather, amount of work done, and rations fed.

Free access to water is desirable. When this is not possible, horses should be watered at approximately the same time daily.

Opinions vary among horsemen as to the proper time and method of watering horses. All agree, however, that regularity and frequency are desirable.

Most horsemen agree that water may be given before, during, or after feeding.

Frequent, small waterings between feedings are desirable during warm weather, or when the animal is being put to hard use. Do not allow a horse to drink heavily when he is hot, because he may founder. Do not allow a horse to drink quantities of water just before being put to work.

PASTURES

Good pastureage is the cornerstone of successful horse production. Great horse-breeding centers are characterized by luxuriant pastures produced on fertile soils. In season, there is no finer forage for horses.

A temporary pasture grown in a regular crop rotation is preferable to a permanent pasture that may be parasite infested.

Since horses are less likely to bloat than cattle or sheep, legume pastures are excellent for them. Specific grass or grass-legume mixtures vary widely from one area to another according to differences in soil, temperature, rainfall, and other natural factors. Ask your county agricultural agent for pasture recommendations suitable to your locality.

Horse pastures should be well drained. Shade, water, and minerals always should be available. Pits, stumps, poles, tanks, and places dangerous to horses should be guarded.

Table 4.—Light horse feeding guide

Age, sex, and use	Daily allowance	Kind of hay	Suggested grain rations		
			Rations No. 1	Rations No. 2	Rations No. 3
Stallions in breeding season (weighing 900 to 1,400 pounds).	$\frac{3}{4}$ to $1\frac{1}{2}$ pounds grain per 100 pounds live weight, together with a quantity of hay within same range.	Grass-legume mixed; or $\frac{1}{3}$ to $\frac{1}{2}$ legume hay, with remainder grass hay.	Oats Wheat Wheat bran Linseed meal	Oats Corn Oats Wheat Wheat bran	Oats (alone). 35 35 15 15
Pregnant mares (weighing 900 to 1,400 pounds).	$\frac{3}{4}$ to $1\frac{1}{2}$ pounds grain per 100 pounds live weight, together with a quantity of hay within same range.	Grass-legume mixed; or $\frac{1}{3}$ to $\frac{1}{2}$ legume hay, with remainder grass hay (straight grass hay may be used first half of pregnancy).	Oats Wheat bran	Barley Oats Wheat bran	Oats 45 45 10
Foals before weaning (weighing 100 to 350 pounds with projected mature weights of 900 to 1,400 pounds).	$\frac{1}{2}$ to $\frac{3}{4}$ pound grain per 100 pounds live weight, together with a quantity of hay within same range.	Legume hay.	Oats Wheat bran	Oats Barley Wheat bran	Oats 30 30 20
Weanlings (weighing 350 to 450 pounds).	1 to $1\frac{1}{2}$ pounds grain and $\frac{1}{2}$ to 2 pounds hay per 100 pounds live weight.	Grass-legume mixed; or $\frac{1}{3}$ to $\frac{1}{2}$ legume hay, with remainder grass hay.	Oats Barley Wheat bran	Oats Wheat bran	Oats 15 30 10
			Rations balanced on basis of following assumption: (1) Mares of lighter breeds (900 to 1,300 pounds mature weight) will give foals about 3 to $3\frac{1}{2}$ gallons milk daily; and (2) mares of heavier breeds (above 1,400 pounds mature weight) will give foals about $3\frac{1}{2}$ to $4\frac{1}{2}$ gallons milk daily.		
			Oats Linseed meal		
			Oats Wheat bran		
			Oats Linseed meal		

Yearlings; 2nd summer (weighing 450 to 700 pounds).	Good, luxuriant pastures (if in training or for other reasons without access to pastures, the ration should be intermediate between the adjacent upper and lower groups).		
Yearlings, or rising 2-year-olds, 2nd winter (weighing 700 to 1,000 pounds).	$\frac{1}{2}$ to 1 pound grain and 1 to $1\frac{1}{2}$ pounds hay per 100 pounds live weight.	Grass hay.	Oats----- Wheat bran----- Barley----- Oats----- Bran----- Linseed meal----- 35 35 15 15
Light horses at work; riding, driving, and racing (weighing 900 to 1,400 pounds).	<i>Hard use.</i> — $1\frac{1}{4}$ to $1\frac{1}{3}$ pounds grain and 1 to $1\frac{1}{4}$ pounds hay per 100 pounds live weight. <i>Medium use.</i> — $\frac{3}{4}$ to 1 pound grain and 1 to $1\frac{1}{4}$ pounds hay per 100 pounds live weight. <i>Light use.</i> — $\frac{2}{6}$ to $\frac{1}{2}$ pound grain and 1 to $1\frac{1}{4}$ pounds hay per 100 pounds live weight.	Grass hay.	Oats (alone). Oats----- Corn----- 70 30
Mature idle horses; stallions, mares, and geldings (weighing 900 to 1,400 pounds).	$1\frac{1}{2}$ to $1\frac{3}{4}$ pounds hay per 100 pounds live weight.	Pasture in season; or grass-legume mixed hay.	(With grass hay, add $\frac{3}{4}$ pound of a high protein supplement daily.)

Note: With all rations and for all classes and ages of horses, provide free access to separate containers of (1) salt (iodized salt in iodine-deficient areas) and (2) a mixture of 1 part salt and 2 parts steamed bone meal or other suitable calcium-phosphorus supplement.

MANAGING HORSES

CARE OF THE FEET

The value of a horse lies chiefly in its ability to move—hence the saying, “No foot, no horse.” The important points in the care of a horse’s feet are to keep them clean, prevent them from drying out, and trim them so they retain proper shape and length. You should learn the names for the parts of a horse’s foot (fig. 34).

Each day, clean the feet of horses that are shod, stabled, or used. Use the hoof pick for cleaning. Work from the heel toward the toe. Be sure to clean out the depressions between frog and bars.

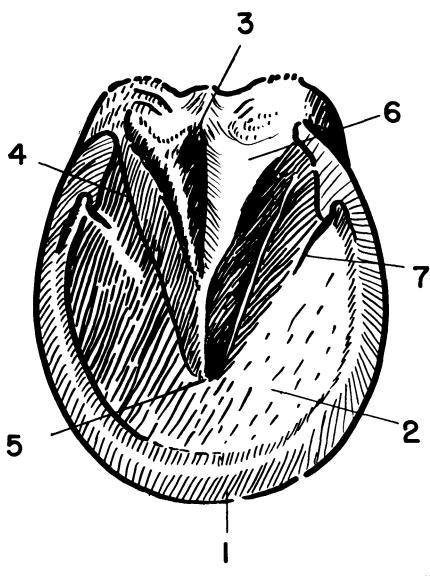


Figure 34.—Parts of the foot of the horse: 1. Bearing edge and hoof wall. 2. Sole. 3. Median furrow of the frog. 4. Lateral furrow of the frog. 5. Apex of the frog. 6. Branch of the frog. 7. Bar.

While you are cleaning the feet, inspect for loose shoes and thrush.

Thrush is a disease of the foot characterized by a pungent odor. It causes a softening of tissues in the cleft of the frog or in the junction between the frog and bars. This disease produces lameness and, if not treated, can be serious.

Hoofs occasionally become dry and brittle. Dry, brittle hoofs may split and produce lameness. The frog loses its elasticity and no longer is effective as a shock absorber. If the dryness is prolonged, the frog shrinks in size and the heel contracts. Dry hoofs usually can be prevented by keeping the ground wet around the watering tank. If the hoofs of a shod horse become too dry, either pack them in wet clay once or twice a week after the horse has been used or attach burlap sacks around them. Keep the sacks moistened. A leather sole with tar and oakum packing beneath it may be used unless the horse travels over cinders. After the hoof has absorbed enough moisture, brush on a hoof dressing such as neat’s-foot oil, sweet oil, or linseed oil. Before each soaking with burlap sacks, remove the oil.

Trim the feet so that the horse stands square and plumb. This will alleviate strain on the tendons and help prevent deformity, improper action, and unsoundness.

The healthy hoof grows $\frac{3}{8}$ to $\frac{1}{2}$ inch per month. If the hoof is not trimmed, the wall will break off and will not wear evenly. To prevent this, trim the hoofs regularly, about once a month, whether the horse is shod or not. Use nippers to trim off the horn; level the wall with a rasp.

Figure 35 shows the proper posture of the hoof and incorrect postures caused

by hoofs grown too long either in toe or heel. The slope is considered normal when the toe of the hoof and the pastern have the same direction. This angle should be kept always in mind and changed only as a corrective measure. If it should become necessary to correct uneven wear of the hoof, correct gradually over a period of several trimmings.

Trim the hoof near the level of the sole—otherwise it will split off if the horse remains unshod. Trim the frog carefully. Remove only ragged edges that allow filth to accumulate in the crevices. Trim the sole sparingly, if at all.

Never rasp the walls of the hoof. This removes the periople, or thin varnishlike outer layer provided by nature as a protective coating that prevents evaporation.

Shoe horses to be used on hard surfaces to prevent the wall from wearing down to the sensitive tissues beneath. A correctly shod horse is a more efficient performer. Shoes may be used to change gaits and action, to correct faulty hoof structure or growth, and to protect the hoof itself from such conditions as corns, contraction, or cracks.

Racing “plates” are used on running horses to aid in gripping the track.

Shoeing always should be done by a farrier who is thoroughly experienced in the art. Shoes should be made to fit the foot, *not the foot to fit the shoe*. Reshoe or reset at 4- to 6-week intervals. If you leave shoes on too long the hoofs grow out of proportion. This may throw the horse off balance.

An unshapely hoof causing uneven wear may make foals become unsound of limb. Faulty limbs may be helped or even corrected by regular and persistent trimming. This practice tends to educate the foal, making it easier to shoe at maturity. If the foal is run on pasture, trimming the feet may be necessary long before weaning time. Check the feet every 4 to 6 weeks. Trim a small amount each time rather than an excessive amount at longer intervals.

Before trimming the feet, inspect the foal while it is standing squarely on a hard surface. Then watch it walk and trot.

Careless trimming may strain the foal's tendons.

Common Faults Corrected by Trimming

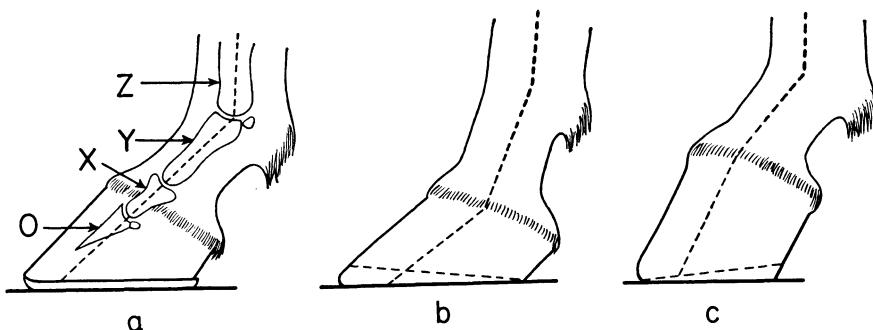
Splayfoot (front toes turned out, heels turned in) can be helped or corrected by trimming the outer half of the foot.

Pigeon Toe (front toes turned in, heels turned out—opposite of splayfoot) can be helped or corrected by trimming the inner half of the foot more than the outer half.

Quarter Crack (a vertical crack on the side of the hoof) usually can be corrected if the hoof is kept moist and the toes shortened.

Cocked Ankles (standing bent forward on the fetlocks—usually hind fetlocks) can be helped or corrected by lowering the heels. Cocked ankles will not occur if foals are allowed to get ample exercise and are not overfed, and the foal's heels are kept trimmed so that there is plenty of frog pressure.

Contracted Heels (close at heels) can be spread apart if the heels are lowered and the frog allowed to carry more of the animal's weight.



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Figure 35.—(a) Properly trimmed hoof with normal foot axis: O—coffin bone; X—short pastern bone; Y—long pastern bone; Z—cannon bone. (b) Toe too long, which breaks the foot axis backward. Horizontal dotted line shows how hoof should be trimmed to restore normal posture. (c) Heel too long, which breaks the foot axis forward. Horizontal dotted line shows how trimming will restore the correct posture.

KIND AND AMOUNT OF BEDDING

Select bedding material by availability and price, absorptive capacity, and potential value as a fertilizer. Bedding should not be dusty, too coarse, or too easily kicked aside.

Cereal straw or wood shavings generally make the best bedding material.

A soft, comfortable bed should insure proper rest. The animal will be much easier to groom if its bedding is kept clean.

A minimum daily allowance of clean bedding is 10 to 15 pounds per animal.

EXERCISE

Let your horses exercise as much as possible on pastures. They will develop strong, sound feet and legs from outdoor exercise. If no pasture is available, exercise mature animals for an hour or two a day under the saddle or in harness.

Horses with bad feet frequently cannot exercise on roads. Those with faulty tendons may not be able to get exercise under the saddle. Allow such animals to exercise in a large paddock, or on a 30- or 40-foot rope, or by leading.

HEALTH

Protect the health of your animals by putting into effect strict sanitation and disease-prevention programs. Although exact programs will differ from farm to farm, basic principles remain the same.

A program of disease prevention and parasite control is outlined here for you and your veterinarian to compare with your existing program and to use in developing similar and specific programs.

General Health Program

1. If equine encephalomyelitis occurred in your community during the preceding year, vaccinate your horses before May 1.

2. Vaccinate your horses with tetanus toxoid and provide them with proper wound treatment. Give booster shots each spring or when a wound is inflicted.

3. Keep your horses away from public feeding and watering facilities.

4. Prevent or control parasites by adhering to the following practices:

Provide adequate acreage; use temporary, seeded pasture rather than permanent pasture; practice rotation grazing.

♦ Pasture young stock on clean pastures, never allow young stock to graze on an infested area unless the area has been either plowed or left idle for a year.

♦ Do not spread fresh horse manure on pastures grazed by horses; either store the manure for at least 2 weeks in a suitable pit or, better, spread it in thin layers on fields that are to be plowed and cropped.

♦ Pick up droppings at frequent intervals when small fields or paddocks must be used.

♦ Keep pastures mowed and harrowed.

♦ Prevent fecal contamination of feed and water.

♦ Administer suitable vermifuges when internal parasites are present; then move horses to a clean area.

♦ When external parasites are present, apply the recommended insecticide.

♦ In areas infested by screwworms, arrange for foaling in early spring; protect both mare and foal. Inspect weekly

for wire cuts, injuries, and for screw-worm infestations. Treat promptly with recommended insecticides.

5. When signs of infectious disease are encountered, isolate affected animals promptly; provide them with separate water and feed containers; follow instructions recommended by a veterinarian.

Breeding and Foaling

Mate only healthy mares to healthy stallions; observe scrupulous cleanliness at time of service, examination, and foaling.

New Horses and Visiting Mares

Isolate new animals for at least 3 weeks before adding them to your herd. During this period, administer sleeping sickness vaccine (in season) and tetanus toxoid, examine the genitals of breeding animals, and make a thorough general and parasitic examination.

Require that mares brought in for breeding purposes be accompanied by a health certificate issued by a veterinarian. Beware of mares that have lost foals or that have a history of trouble in foaling.

If feasible, cover visiting mares near their own isolation quarters, using tack and equipment that is not interchanged with that of mares kept on the establishment.

BUILDINGS AND EQUIPMENT

Buildings and equipment for horses should be adequate, but need not be elaborate.

One or two riding horses can be stabled in a barn with other animals, or in a building used primarily for storage.

Figures 36 and 37 suggest a design of a building for light horses; complete

working drawings may be obtained through your county agricultural agent or from the Extension agricultural engineer at most State agricultural colleges. Ask for No. 5838, Riding Horse Barn.

It is hard to determine proper dimensions of such buildings. Table 5 indicates conservative average figures.

Table 5.—Space requirements of buildings and equipment for horses

Type and age of animal	Stalls				Hay manger			Grain box			Water
	Dimensions tie stall, in- cluding manger	Dimen- sions box stall, in- cluding manger	Height of ceiling	Height of doors	Width of doors	Height at throat	Width	Length	Depth of sides	Height at throat	
Mature animals (mare or gelding).	5' wide; 12' to 14' long.	10' x 10' to 12' x 12'.	8' to 12'	8'	4'	28"	38" to 42".	12" to 16".	24" to 30".	8" to 10".	38" to 42".
Brood mares.	- - - - -	12' x 12' or larger. 10' x 10' - - - - -	- - do - - -	- - do - - -	- - do - - -	- - do - - -	- - do - - -	- - do - - -	- - do - - -	- - do - - -	Do.
Foals to 2-year- olds.	- - - - -	14' x 14'	- - do - - -	- - do - - -	- - do - - -	24"	32" to 36".	10" to 16".	- - do - - -	6" to 8"	32" to 36".
Stallions ¹	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	28"	38" to 42".	12" to 16".	- - do - - -	8" to 10"	38" to 42".

¹ Stallions either should be worked daily or provided with a 2- to 4-acre grassy paddock.

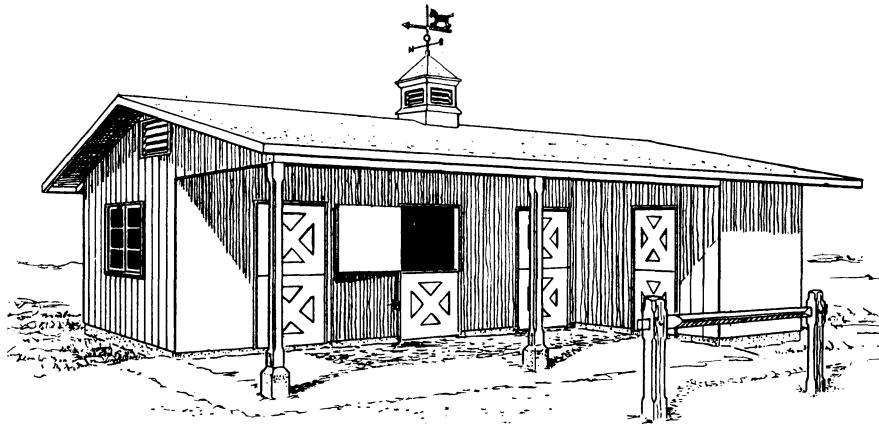


Figure 36.—Riding horse barn (USDA plan No. 5838).

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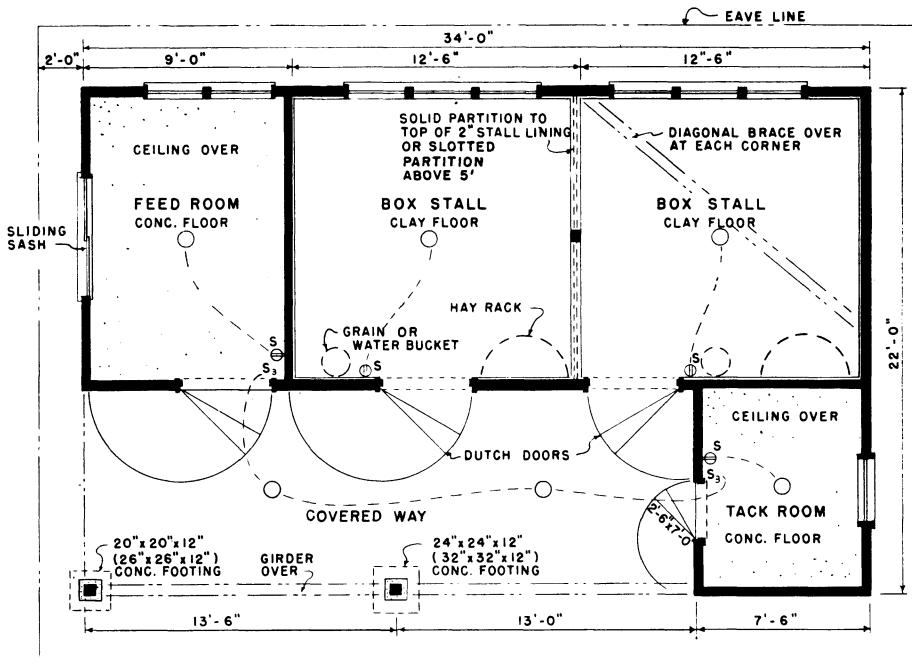


Figure 37.—Plan for riding horse barn in figure 36 (USDA plan No. 5838).

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FENCES

A preferred type of horse fence is constructed of poles or of 2-inch lumber. Avoid poles or lumber with projections that can cause injury.

Woven wire, or a combination of

woven wire with one or more barbed wires at the top, may be used when the enclosure is not crowded. Barbed wire fence, however, always is hazardous to horses.

(Cover) Arabian mare "Marifa" and foal.

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